Textile World

VOL. 86, NO. 8—ESTABLISHED 1868

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Textile World

July, 1936

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Editor: DOUGLAS G. WOOLF

"How Long Since You Have Had Dinner...?"

"HOW often do you have dinner with any of the people in your village and find out how they live and what they are thinking about?"

This homely question put by Donald Comer to superintendents and overseers at the Southern Textile Association convention last month started a lot of thinking. Several men repeated it to us: some soberly, in self-rebuke—and others with elation at the memory of a recent excursion into the minds and hearts of their personnel.

"You don't have to eat in every house, or kiss every baby in the village," continued Mr. Comer realistically.

Seldom have we heard a more human talk.

It started in our mind a whole train of thought about a relationship within a mill organization which is far more important than many of the corporate problems which occupy the attention of textile manufacturers.

This relationship extends upward beyond that specified by Mr. Comer and includes the contact between a manufacturer himself and his operating executives. It is a safe statement that this problem has had all too little attention in the past. This is not to be taken as over-critical of textile men; it applies to all industry.

We are continually amazed at the lack of exchange of thought between the average executive and the men who carry company policies into execution via the men and women at the machines.

■

What are a few of the simple ways in which this sin of omission can be corrected?

The most important is the staff conference. Every little while we run across a manufacturer who is all steamed up over the "discovery" of this medium of contact. Too often we run across this same man a year later and find that the plan has petered out. "They lost interest in it," is the usual explanation. Nonsense. Nine times out of ten that is a confession of defeat. The executive just didn't put into it the time or thought necessary.

A regular (either weekly or semi-monthly) conference between a manufacturer and his key-men is a "must." But to make it a vital contact, in which the operating men talk out in meeting, instead of just saying "Yes, sir," is a job all its own. No one can do it properly except the head-man himself. In a large organization, he needs the counsel of a personnel director, but he has to do the heavy work at the meetings.

Then, to follow through on these conferences, there should be some sort of an educational organization which will embrace the lower ranks of the operating personnel. We know of some mills where this type of effort has been a continuing and successful one for years. We know others where the meetings are farcical. We know far too many where no attempt at all is made in this direction.

■

There are more or less scientific guides which should be studied, and may be followed. But primarily this is a human problem.

In times of depression, it comes nearest solution. Boss and men come together, then, and fight a common enemy. But why wait for such a defeatist excuse?

The same impulse which took Donald Comer, Robert West, and Dr. C. T. Murchison to the S. T. A. meeting last month to counsel and help the southern operating executives in session there, should be applied week in and week out in every mill, large or small, in the industry.

The will to do this is not lacking. By and large, we believe textile manufacturers have more desire to be close to their organizations than have executives in the average industry. There is a background of closeness which testifies to this fact. But, as in all things, it takes more than intention. It demands study plus follow-through.

As we meet textile superintendents and overseers, we become more and more convinced that this industry is rich in man-power. Those men have stood by through years of struggle. When they have failed, it has too often been because of lack of knowledge as to what it was all about.

That is what the executive can give them.

"How long since you have had dinner with some of the operatives in your village?" is the perfectly fair question which an executive put to operating men.

"How long since you have met with, and been frank with, your operating men?" is the equally fair question which might be put to many a textile executive.

The Editor Says:

MUCH Better, in Fact

LAST MONTH, we devoted the leading editorial page to a public admission that the textile industry was "feeling better, thank you." It was paper and ink well spent. It gave us a blank check on the "I told you so" fund.

The industry *is* feeling better: *much* better, in fact. This switch in sentiment and in actuality has been almost, but not quite, as spectacular as that which occurred in August last year.

Details will be found in the TEXTILE WORLD Analyst (page 84 in this issue) and in the Digests (commencing on page 106), but let us cite one example of the way the change has worked:

Things looked bad in cotton goods in April. Rate of mill operation was out of all proportion to business being booked. If the two had continued at that same ratio for a month or two more, the market would have gone to pieces. Two things saved it: first, the fine volume of unfilled orders carried into this year absorbed the high output for the first few months; second, the sudden and sharp pick-up in buying in May saved the situation just when the other "cushion" had been about used up. The trend since then is history. The demand-supply balance at this writing is in excellent position.

Practically all branches of the industry are in a healthier position now. From where we sit, we think it likely that 1936—generally speaking—will be the best textile year since the depression started.

And we don't think 1937 is going to be so bad either. We are definitely on the up-swing; it doesn't look like a short stroke.

■

Might as Well Face Facts

WE ARE all for the campaign of the American Cotton Manufacturers Association toward continuance of code compliance. We think the drive for formal commitment of manufacturers is a sound safeguard.

We also feel that it was wise to make the modification in the machine-limitation provisions if that flexibility was needed to secure continued support for the basic labor standards: the hours and wages for employees. The latter are without question the vital phases of the code structure; they must be preserved at any cost.

Having said this, however, we must go on to point out that the A.C.M.A. and individual manufacturers should face frankly the effect of this modification upon production control. Here is the plain fact: Basing the 80-hour week for machinery upon the average of the plant as a whole rather than upon each machine, pretty well scraps the machinery-limitation plan. Its effectiveness, as we knew it under the more rigid provision, is seriously impaired if not lost. Nearly every mill has ample idle and more or less obsolete equipment around which it can use for averaging up—or rather down. As a specific example, a mill with 400 good looms and 200 junk ones can run the 400 three shifts and be just as well off in productive capacity as the mill with 600 good looms.

To repeat, if this is what the industry wants to do, O.K. As we pointed out in our Annual Number, an important minority had become out of sympathy with the machinery-limitation idea; we recommended that the industry take a careful census in order not to try to push a program which might have lost the support of manufacturers.

We still feel that way—*but*, as always, we feel further that the industry should admit frankly just what it is doing. And in this case, the fact which must be faced is the definite departure from production control through limitation of hours per machine.

NATURALLY, we were interested in Harry Reimer's article in the *Daily News Record* pointing out the need for a closer relationship among textile associations, including the possibility of some sort of centralized set-up. We are, today, as heartily in sympathy with that idea as we were in December, 1933, when we advocated the formation of an American Textile Institute—and, again, in November, 1934, when we urged the industry to take at least the compromise step of forming a national council composed of representatives of the various existing associations. To repeat the theme-song we used on both those occasions: *Eventually—why not now?*

■

WHILE we're on the subject of old hobbies, we must express our satisfaction over the plans for the National Rayon Technical Conference to be held next May in Washington. This is potentially of great importance to the textile industry. Co-sponsored by the four leading technical associations in the field, the meeting will bring together engineers, chemists, and other groups of technicians. It was the sort of thing we had in mind in April, 1935, when we advocated a series of joint meetings of the several technical associations, as a possible forerunner to the eventual formation of a centralized organization. We hope that mill-executives will lend their support to the Washington meeting by making it possible for their technicians to attend.

■

ONE of the most encouraging textile trends is the steadily increasing amount of construction going on in the industry. The average job is not large—but the aggregate of expansion and modernization is impressive. Firms selling to textile mills are finding a receptive audience.

■

GOOD *jobs of the month:* Robert West's clear thinking and straight talking before the Southern Textile Association convention. . . . . Rocky Mount Mills' guarantee that yarn covered in its contracts "has been or will be manufactured in conformity with the former textile code."

This Month and Next

This Month

Numbered and Nought

One of the most confusing things about number ducks is the system by which their weights are indicated, and readers unfamiliar with it will welcome the explanation on page 85. But even readers experienced on cotton ducks—and also, incidentally, those experienced on cotton sheetings—will appreciate the accompanying listings of constructions, finishes, and uses of these two important staple fabrics.

Double Trouble

A woolen designer who can lay out successful backed, double, and treble cloths has a right to consider his education advanced. Complete knowledge of these difficult fabrics is, however, limited to a few; and R. A. C. Scott offers more of his helpful information on page 80.

Ten, Count 'Em

Ten questions from a loomfixer, plus the answers by Ivar Moberg, are printed on page 72. Far from being done up and knocked down by this barrage, we believe that Mr. Moberg still has the stamina and obligingness to handle more.

Permanent Finishes

In the first of two articles on this subject, John T. Gibbons describes the preparation of viscose solutions and their application to cotton fabrics to produce linen-like effects. (Page 88).

6s, 13s, 22s

And now, on page 69, Professor Merrill offers organization calculations for three specific cotton yarns. Better brush up on your studies, boys; but your only "exams" will be on the firing line—that is, when you put your acquired knowledge into practice.

Hosiery Rates

M. G. Berg, of Ajax Hosiery Mills, explains how time studies can be made for the purpose of setting piece rates on new styles. (Page 68.)

Drafting-Roll Settings

Some practical advice by A. K. Landau on setting the drafting rolls of cotton machinery. Length and character of the cotton are the principal governing factors, he says. See page 66.

The First Is Neps

There are five major difficulties encountered in the manufacture of woolen yarns, all of which will be discussed by L. A. Crosland in a series of three articles. The first is on page 71.

Straight or Skip

Just decide which way you want to enter your rayon or silk warp and then turn to page 100 to see in what order the shafts should be operated. It is a handy chart to have around.

Sizing Acetates

Recommendations are given on speeds, tensions, and temperatures to be used in warping and sizing of acetate yarns. A practical article by two men who are close to the acetate field. (Page 78.)

Possible Efficiency

Most engineers can tell you the actual efficiency of their power plants. Determination of possible efficiency is not so well understood. Yet one cannot calculate the real efficiency without knowing both the actual and the possible efficiencies. If this seems involved, Mr. Pef's article on page 75 will make it clear.

Dyer's Notebook

E. S. Dunlap, of Belle Knitting Co., gives some timely hints on improving the quality of work, reducing costs, and speeding up production in the knit-goods dyehouse. (Page 79.)

■

Next Month

To Get What You Want

Many articles have been written on the color effects obtained by applying different warp and filling color patterns to various weaves, but little has been said on how to go about getting any specific effect wanted by applying the right patterns to the right weave. T. R. Hart corrects this situation next month.

Line Them Up

In the next issue Walter A. Simond lays down a specific procedure for aligning full-fashioned hosiery machines accurately. Readers of Mr. Simond's past articles will expect (and receive) a discussion of outstanding value.

Six Blends

Next month Frederick B. Hudson points out what qualities can be imbued in tops by proper selection of the ingredients, and offers six specific blending formulas.

Dyeing Pile Fabrics

Many mills are following the old conventional batch methods for dyeing pile fabrics. In August we shall describe a continuous system which has many advantages over the usual process.

Cutting Throwing Costs

A very important development in modern throwing is the systematizing toward package-to-package operations coupled with increases in the size of packages. This is said to have cut throwing costs in half in many instances, and will be fully discussed from every angle in the next issue.

Processing Staple Rayon

Dyers of continuous filament rayon find that some new problems arise when they turn to staple-fiber fabrics. An article in our next issue will give some valuable hints on dyeing these new materials.

Do You Know?

With no warp in a running loom, what keeps the shuttle from flying out? ***Page 72.***

What percentage of contraction is caused by a normal spinning twist in a 13s cotton yarn? ***Page 69.***

What is the proper working order of the shafts for a seven-leaf twill, skip entry? ***Page 100.***

How many ounces does a No. 5 cotton duck, 66 in. wide, weigh? ***Page 85.***

What is gained by changing the order of colors in a warp for double plain fabric? ***Page 80.***

Why should the woolen-card fancy be run into cylinder while latter is ground? ***Page 71.***

What are the advantages of low speeds in drafting cotton? ***Page 66.***

What changes in soaking formulas are necessary in changing from soft-gum to hard-gum silks? ***Page 76.***

How to calculate the possible (not actual) efficiency of your power plant? ***Page 75.***

What chemical can be added to the dyebath and other solutions to prevent many of the difficulties due to hard water? ***Page 79.***

What temperatures should be maintained on the drying cylinders when running acetate warps on a five-can slasher? ***Page 78.***

To Conduct Textile Organization Study

THE Wharton School of the University of Pennsylvania has been appointed as the research agency to conduct the study of "Production and Distribution Organization in the Textile Industry," the financing of which was recently authorized by The Textile Foundation. The investigation will be carried on under the advisory supervision of the Committee on Economic Research of the U. S. Institute for Textile Research and an auxiliary committee composed of presidents of several of the major textile associations.

The industrial Research Department of the Wharton School has had close contacts with the textile industry for a long period of years, through its work in the wool and hosiery divisions particularly—and more recently in connection with the program of textile education. Joseph H. Willits, dean of the Wharton School, will be in general charge of the study and will be assisted by the following members of the Industrial Research Department: C. Camby Balderston, professor of industrial management; Anne Bezanson, co-director of the department; H. S. Davis, in charge of the wool section; and George W. Taylor, in charge of the hosiery section. Mr. Davis will serve as secretary of the group. Other members of the department and of the school will be called upon to participate in particular phases of the study.

As announced at the time the authorization of this study was made known by the Textile Foundation, it will involve particularly investigation into the factors affecting the success or failure of various types of organization which have undertaken, at any important point, to bridge the gap between mill and consumer. Its purpose is to serve as a guide to individual manufacturers in their own determination of future policies. Factors influencing periodical variation in production will also be given consideration as part of this study.

The members of the Committee on Economic Research which recommended the study and will act as the sponsoring committee include: Fessenden S. Blanchard, Pacific Mills, chairman; Paul T. Cherington of Cherington, Rope & Wood; Stanley B. Hunt, Textile Economics Bureau; H. V. R. Scheel, textile consultant; W. Homer Turner, Marshall Field & Co.; Douglas G. Woolf, editor of TEXTILE WORLD; A. W. Zelomek, International Statistical Bureau.

The advisory group representing textile associations, who have joined with the above committee in recommending the study and in approving of the appointment of the Wharton School to conduct it, includes W. Ray Bell, president, Association of Cotton Textile Merchants of New York; Arthur Besse, president, National Association of Wool Manufacturers; A. W. McCready, representing National Federation of Textiles, Inc.; Dr. C. T. Murchison, president, Cotton-Textile Institute.

Other executives of leading textile associations who have expressed interest in this study and a willingness to cooperate are: A. F. Allison, secretary of the International Association of Garment Manufacturers; Roy A. Cheney, managing director of the Underwear Institute; Earl Constantine, managing director of the National Association of Hosiery Manufacturers; Chas. Whitney Dall, president of the National Rayon Weavers Association; and W. P. Fickett, president of the Textile Fabrics Association.

A.C.M.A. Canvasses Mills On Compliance

THE plan of the American Cotton Manufacturers Association to check degree of compliance to code wage and hour standards by the questionnaire method, as noted in these columns last month, materialized June 22 when the association mailed such a questionnaire to its member mills. In addition to requesting information on this question of compliance, manufacturers were also advised regarding a proposed modification of the machinery limitation provisions. This was two-fold: first, that the loom should be the unit of productive equipment in weaving mills except where—and to the degree—that sales yarn is produced in which case spindles would be the unit; and, second, that the 80-hr. machinery limitation provision be based on the average for the entire plant for the week instead of on each machine as hitherto. It is understood that, in view of opposition which has developed over a period of time to the inflexible machinery limitation provisions of the codes, it was felt necessary to introduce this flexibility if support for the basic labor provisions of the code were to be secured in the form of a formal agreement.

Another difference between the present move and that which featured the first circularization of the agreement is that the present one does not include any proviso that a certain percentage of the industry must be lined up before the agreement goes into effect; however, it is known that a strong follow-up will be employed in order to get commitments from as large a percentage of the industry as possible.

Although it was originally understood that the questionnaire was being sent to northern mills also, this was learned later to be incorrect. However, it is also known that the northern group, while not taking any specific action at this time, is in full sympathy with any movement to insure continuance of code compliance and consequently is standing by ready to help when and if needed.

Result of inquiries made by our southern editor indicates the modified plan is being well received in that section and that a very large percentage of assent is expected. It is also apparent that the flexibility imparted to the machine-hour limitations is welcomed by a great many. Manufacturers interviewed in the North indicated that they would have been just as pleased if the modification on machinery limitations had not been brought up at this time but that they stood ready to abide by any decision reached by the majority of southern mills.

D-13 Concludes a Busy Season

TWENTY-SIX items of accomplishment in creation or revision of textile standards were included in the report which Committee D-13 made on July 2 to its parent association, the American Society for Testing Materials, at the latter's annual meeting in Atlantic City. Proud of the work of its key officers, the committee re-elected Professor H. J. Ball chairman and W. H. Whitcomb secretary. New vice-chairmen are G. E. Hopkins, of Bigelow-Sanford Carpet Co., and R. H. Brown, of Parks-Cramer Co. F. A. Prisley, of Wanskuck Co., heads a new section on woolen and worsted fabrics.

Staple Cotton Scarcity Serious

THE scarcity of cotton—particularly staple cotton—which has been threatening during recent months has now become a matter of common knowledge and concern. It has been mentioned in public addresses, and forms the subject of private conversations with worried executives. Mill men have told TEXTILE WORLD representatives recently that they have been forced off certain constructions because of inability to secure proper grade and staple.

An excellent summary of the situation appeared in a recent number of the *King Cotton Weekly* published by the Southern Combed Yarn Spinners Association for its members. This association, which has been warning spinners since Jan. 1 that there was an imminent possibility of a real shortage in staple cotton, quotes from an authoritative source (as of June 15) as follows:

"The total stock in all Delta warehouses on June 1 was 66,373 bales. For the last four or five weeks cotton has been shipped out at the rate of 10,000 to 11,000 bales a week. It is our opinion that the Delta stock will be less than 20,000 bales on July 31, 1936, which is the end of the cotton year. This will be one of the smallest stocks of record.

"On Thursday of this week the remaining long staple stock belonging to the producers' pool which amounts to only 7,000 bales will be sold. As far as

we know this is the last lot of unsold staple cotton in the Delta.

"It is now apparent we are going to exhaust all the surplus stock of staple cotton that has been carried over for several years, and the South will be completely bare of staple cotton when the new crop begins to move. There is a broad demand from mills for staple cotton at present, and just what the mills are going to do to secure this supply is a question I cannot answer, for there simply isn't any cotton available with which to fill the demand."

In an effort to help in the emergency, the Commodity Credit Corp. in Washington announced that stocks of cotton held under the 1934-35 12c. loan would be released to borrower-producers up to July 20. This action followed representations made to officials by individual manufacturers and by the Cotton-Textile Institute. Unfortunately however it is held in many informed quarters that this action will not afford any appreciable relief in the tight spot situation in staple cotton. This is based on the opinion that 90 to 95% of the desirable staple cotton was withdrawn when the loan was previously open.

It is generally agreed that the shortage is the most serious that has occurred in years. Observers call the situation bizarre. "Best friends are falling out and brothers are using fisticuffs over who gets *the* bale." is the way one puts it. "Shippers are able to name their own price, and believe me they are naming it!"

Urges Quota System On Japan Imports

A QUOTA system, rather than continued increases in tariffs, is the only effective way to protect the American textile industry from the "menace of cheap Oriental labor," stated Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, at a meeting of the Alabama Cotton Manufacturers Association in Anniston, Ala., last month. He stated that Japanese imports could not be regulated by imposing high tariffs without completely cutting off textile trade with other nations. "I submit then that we must establish a quota for Japanese textile imports, and it is to this end that we will strive in the next Congress."

Meanwhile other countries turn their attention to the same danger. Paraguay decided to restrict importation of Japanese goods, especially textiles, in order to protect national industries; it was stated that Japan would have to establish compensatory commerce with Paraguay, if it desires to continue exporting to that country. Australia adopted a conciliatory attitude towards Japan in connection with its (Australia's) new and higher tariffs. It is pointed out that the new duties apply to only a limited range of the cheapest Japanese textiles. In Canada, G. Blair Gordon, managing director of Dominion Textiles, stated that, to protect Canadian manufacturers of rayon against Japanese underselling, a fixed valuation should be placed on imports to equalize landed costs with domestic production costs. He expressed the fear that under the present tariff the Asiatic producers could catch as much of the Canadian textile market as they wanted.

Sees Progress In Textile Education

BETTER courses, more efficient instruction and an opportunity for greater service to the industry will result in the textile schools of the country because of the program being conducted by the Textile Foundation, in the opinion of Franklin W. Hobbs, chairman, who gave the principal address at the graduation exercises at the New Bedford Textile School last month. Mr. Hobbs pointed out that the Foundation had conducted a thorough and comprehensive study of the courses of instruction in the schools and had sponsored frequent meetings of the heads of these institutions.

"The present tendency in the textile industries is toward specialization," stated Mr. Hobbs. "The business man who is not specially trained in his own field of enterprise is greatly handicapped in the present highly competitive conditions of all lines of industry. In this connection the textile schools of the country have a great opportunity for service to our textile industry."

Further Evidence of Code Compliance

ADDITIONAL reports from many important industries, completing a cross-section survey of current working conditions, were cited recently by George A. Sloan, chairman of the Consumers' Goods Industries Committee, as further evidence that industry generally is steadily approaching and, in some cases, exceeding 1929 levels. A preliminary report of the survey had been made public previously and was noted in these columns last month.

"In my opinion," stated Mr. Sloan in releasing the supplementary data, "the cross-section study offers a reliable index of industry-wide conditions. The groups covered are generally regarded as setting the pace for all industry. The reports have revealed an impressive demonstration of industry's determination and ability to maintain, voluntarily, improved wage and hour standards."

What Congress Did to Textiles

(From Textile World's Washington Office)

PASSING in review the accomplishments of the last session of Congress, it is somewhat surprising to note the number of new laws affecting textiles to a greater or less degree. Few of these were aimed directly at the industry, but this fact fails to alter the definite effect that their passage will have upon business practice.

In summary form, new laws with which our readers should become acquainted are:

The tax bill: As finally passed, Federal levies will be as follows: a "normal" corporation income tax of from 8 to 15%; a supertax of 7 to 27% on that part of adjusted net income not distributed in dividends; alternatively, subjects dividend payments to normal individual income tax. Also includes "windfall" taxes to recover processing tax refunds. Total estimated yield, $800,000,000.

Price discrimination: Forbids discrimination in price between customers buying equivalent quantities of goods in interstate commerce; limits brokerage allowances to payments for actual services; requires that advertising allowances be available to all comers in proportion to quantities; sets up Federal Trade Commission as arbiter of quantity discounts in upper brackets where competition is limited.

Government contracts: Walsh-Healey bill applies to Government contracts over $10,000 for purchase of materials and supplies; requires payment of prevailing wages as set by Secretary of Labor, 40-hour maximum work week, forbids convict and child labor in fulfillment of contract. Limits bidders to actual manufacturers and dealers.

Soil conservation: Substitute measure for outlawed AAA provides benefit payments to farmers for practices tending to preserve or restore soil fertility. Indirect effect is regulation of production.

Commodity exchanges: Amendment of Grain Futures Act regulating trading in cotton and other agricultural products.

Strikebreaking: Makes it a felony to transport strikebreakers across a State line. Imposes heavy penalties.

Patents, etc.: Two laws bringing U. S. practice into conformity with Hague conventions on patents, copyrights, trademarks.

Neutrality: Extending to May 1, 1937, previous restrictions on exports to belligerant nations.

Cotton: Repeal of cotton control act, supplement to AAA.

Commodity credit: Increasing capital stock of Commodity Credit Corporation by $97,000,000 from RFC.

Unlisted securities: Setting up regulation by SEC of unlisted securities, previously granted blanket exemption which expired May 31, 1936.

Technological Unemployment: Directing Secretary of Labor to report on labor-saving machines and number of workers affected by them.

Operating Men

Must share responsibility for maintaining improved working conditions, S. T. A. told

STABILIZED working conditions, particularly as regards wages and hours, are essential to the prosperity of the textile industry—and the superintendents and overseers can do more toward the realization of such stability than can any one group. This was the message brought to the annual convention of the Southern Textile Association at Blowing Rock, N. C., June 18-20, through the medium of one of the best programs ever presented to that group. The guest speakers included outstanding leaders of the industry: Dr. C. T. Murchison, president of the Cotton-Textile Institute; Donald Comer, president of the American Cotton Manufacturers Association, and Robert R. West, president of Riverside & Dan River Cotton Mills.

Responsibilities of the operating executive were also emphasized by President John A. McFalls in the first address of the convention. "We are trustees," he declared, "having entrusted into our care and keeping nearly one billion dollars worth of property to operate and protect. There are approximately 250,000 operatives employed in the cotton mills of the South whose happiness and source of income and philosophy of life are our responsibilities."

Specific requirements and responsibilities that are more directly the duties of overseers, according to Mr. McFalls, are as follows:

"The interviewing and employing of applicants; the selecting of sub-executives; instructing help; giving proper supervision; maintaining discipline; keeping interest alert; looking after working conditions for the safety and health of operatives; transmitting and giving orders; transferring, promoting, and discharging; obtaining cooperation; keeping organization compact and efficient; keeping machines in good repair; keeping up a high machine efficiency; keeping product properly routed and moving; setting up standards of production; constantly watching quality of product; having a knowledge of operations; determining causes of defects; keeping work running well as nearly as possible; knowing the duty of each machine and seeing that it performs properly; seeing that proper atmospheric conditions are maintained in room; knowing the raw stock you are running and how to process it; holding up quality; holding down seconds; holding cost to schedule; giving clear and accurate orders."

Robert West Sounds Keynote

Technical manufacturing details were temporarily shelved when the next speaker, Mr. West, sounded the keynote of the meeting.

A stable wage structure, supported by a basic minimum wage and held together by a framework of occupational differentials properly reflecting the skill required in the various operations, he declared, is a primary consideration of proper manufacturing conditions.

Going further into the basic problems of the industry, Mr. West pointed out that "corollary to the question of wages is the question of hours of labor. I am one of those who believe that 60 hr. per week, or 55 hr., or 50 hr., required of employees as a regular or standard workweek, is not only unnecessary but positively detrimental to the best interests of the industry.

"Those who insist on departing from standards already set up by the industry," he continued, "seem to feel that the rest should stand aside and view with complacency such procedure, or, humbly, hat in hand, go to them and respectfully request compliance. Are such departures to be condoned on the theory of rugged individualism and tolerated, regardless of their disastrous effects? The cotton textile industry cannot submit itself to that excess of tolerance. Sooner or later, ways will be found to protect industry from such disrupting forces. We need not ask whether or not such ways will be found. The question is rather, will the industry itself provide and maintain the standards, or will that function be left by default to some other agency?"

In view of the present-day competition offered the cotton textile industry by automobiles, radios, electric refrigerators, and other luxuries, Mr. West said that operation of a successful mill has become a "precision business" which requires the strictest attention to technical improvements, problems of waste, quick-changing styles, and, extremely important, the narrowing of manufacturing margins. "It is inconceivable," he emphatically asserted, "that a manufacturing operation requiring continuous skill and precision can be conducted in an atmosphere of confused and uncertain wage schedules—schedules subject at any moment to the capricious action of some individual."

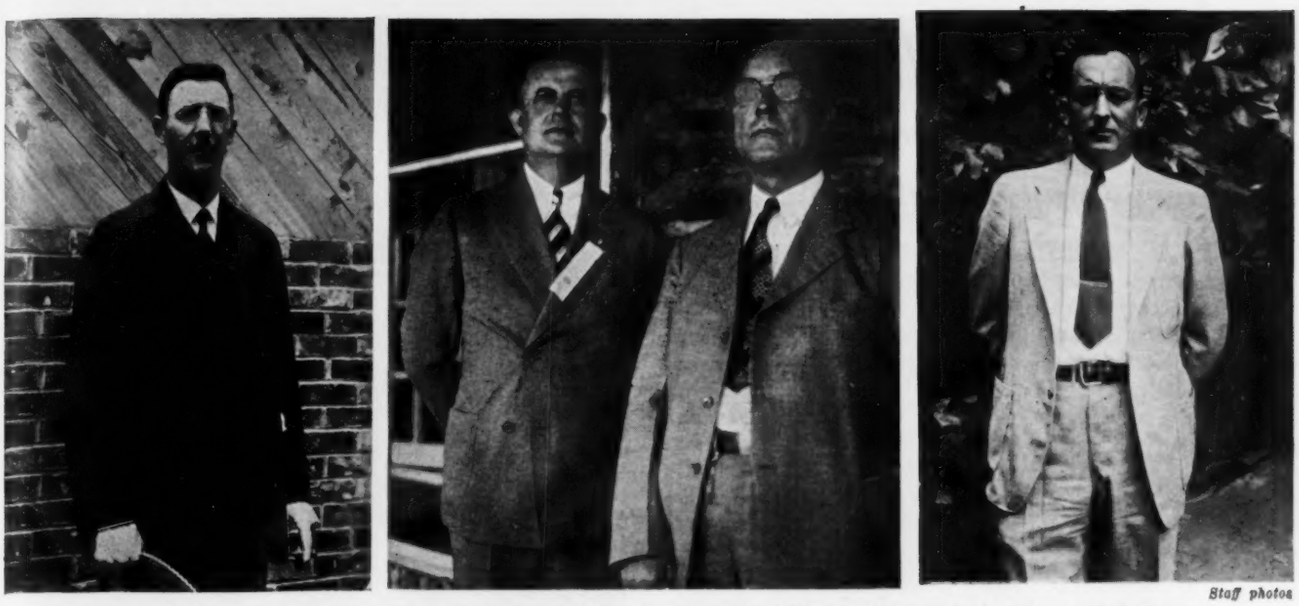
The other featured speaker on the Friday program, Mr. Comer, president of the American Cotton Manufacturers Association and head of Avondale Mills, Alabama, urged a closer feeling of personal friendship between the managers of mills and their employees.

"How many of you," he queried, "ever take a meal in the home of an employee? How many of you have the village children speak to you with a smile as you walk along? Are you proud to show visitors through your mill and village? Before N.R.A., there were many phases of our industry of which we could not be proud. Now, however, most of these evils have been eliminated, and we must fight to hold fast to recent improvements. We need the help of the members of the Southern Textile Association to keep working conditions at their present high level.

"The job to be done requires the help of many people, directed by you. It must be done by loving cooperation and not by driving. I hope that each of you will return home determined to improve your mills and your villages. To do this it is not necessary to eat with every family in the village or to kiss every baby. Simply show the people that you are interested in them and wish to help them live fuller and more useful lives."

Mr. Comer, earlier in his address, cited the menace of the Japanese import situation and explained the competitive position of cotton and jute. He requested the operating executives to explain these problems to the employees and enlist their aid in seeking a solution.

Expressing pleasure at the opportunity of meeting with a group of technicians, Dr. Murchison said that it



Staff photos

Left to right, L. J. Rushworth, elected chairman of the board; Fred L. Still, elected president; John A. McFalls, retiring president; E. M. Holt, elected vice-president. The Southern Textile Association's new president, Mr. Still, was born in Greenwood, S. C., and received his higher education at Clemson College. His first textile work was with Springs Cotton Mills, Lancaster, S. C., after which he became overseer of carding at Arcade Cotton Mills, Rock Hill, S. C. Leaving Arcade, he was made superintendent of Aragon-Baldwin Cotton Mills, of the same city, where he remained until he became superintendent of Victor-Monaghan Co., Greer, S. C. Mr. Still is the son of B. L. Still, a veteran operating executive of the Springs Cotton Mills, Lancaster, and a brother of C. L. Still, general manager of the Springs plants at Fort Mill, S. C.

is impossible to find any complaint with a technician, unless possibly the one fault that he has done his job too well—which is to say, that he has always managed to keep a few jumps ahead of those whose responsibilities are in other fields. As an aftermath to the stupendous revolution of methods and means of human gratification, resulting from the achievements of a technician, we have found the blessings intermingled with torments, he pointed out. Economic crises, depressions, booms and speculations, over-production, labor problems, price instability, and cut-throat competition have all become routine terms. It is the part of wisdom for the technicians themselves to give their thought and aid to these questions, he urged.

Certain practical difficulties present themselves, Dr. Murchison pointed out. For example, a good production manager, interested only in cost, will probably prefer double- to single-shift operations, and to him a third shift whittles down still more the element of overhead per yard or pound of output. No fault can be found with this reasoning, he said, if the demand for the output is unlimited—which, unfortunately, is not true in cotton textiles. The equipment of the industry is such that operations even on a two-shift basis throughout the year constitute an inevitable surplus.

Similarly, as regards hours of individual employment, it is true that a 40-hr. week is disappointing from the point of view of economical production, but we have reached a stage in our history when purely technical considerations no longer control the daily or weekly period of individual employment. A reasonable approximation to uniform standards is necessary for a stable price basis if the industry, as a whole, is to prosper.

With respect to wage scales, the considerations involved are exactly similar. Everyone can feel sympathy for the struggling mill unit which faces the alternative of a payroll reduction or insolvency; it is but natural that the former should be preferred. Nevertheless while scattered instances of wage reductions may directly affect not more than 5,000 or 10,000 workers, they may become disastrous for the hundreds of thousands of workers in the industry.

It happens that the technician, without meaning to do it, is inevitably being drawn into the task of reconciling the technical and the economic, concluded Dr. Murchison.

Business Session

The remainder of the Saturday session was given over to routine reports and election of officers.

As result of a proposal made by the board of governors, it was voted to change the by-laws of the association so as to make membership more attractive to textile students. This will be accomplished by eliminating dues for student members. Also, it was decided that the book of proceedings in the future would be furnished only to senior and graduate student-members.

Fred L. Still, vice-president of the association and superintendent of Victor Monaghan Co., Greer, S. C., was elected president. E. M. Holt, manager of Erwin Cotton Mills Co., No. 3 Plant, Cooleemee, N. C., was made vice-president. Marshall Dilling, Gastonia, N. C., was re-elected executive secretary. Harvey Hill, Charlotte, N. C., was re-elected secretary and treasurer. L. J. Rushworth, Danville, Va., became chairman of the board, while new directors include Frank D. Lockman, Lockhart, S. C.; R. T. McWade, Knoxville, Tenn.; Robert T. Stutts, Fountain Inn and Simpsonville, S. C.; A. H. Cottingham, Greenville, S. C., and W. E. Hammond, Balfour, N. C.

Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, was unanimously elected an honorary member.

The annual banquet of the Associate Members Division was held Thursday evening, at which time Edwin Howard, Veeder-Root, Inc., Greenville, S. C., was elected chairman, succeeding W. B. Uhler, Borne Scrymser Co., Spartanburg, S. C. George Snow, Atlanta Brush Co., Atlanta, Ga., was named vice-chairman. The dinner was featured with a floor show.

Among the honor guests at the convention were Thomas H. Webb, former president of the American Cotton Manufacturers Association, and W. M. McLaurine, secretary of the same organization.

Moses Pendleton

Heads American Woolen Co., succeeding Lionel Noah

MOSES PENDLETON, heretofore vice-president and general manager of the American Woolen Co., has been elected president of the company to succeed Lionel J. Noah, who resigned on the advice of his physician. Mr. Noah became president in February, 1931.

Mr. Pendleton joined the American Woolen Co. in 1902—only a few years after its formation—and has served in many executive capacities. For some years he was head of the yarn manufacturing department, and later became general manager. When Mr. Noah was elected to the presidency in 1931, Mr. Pendleton was made vice-president in addition to general manager. A statement by Andrew G. Pearce, Jr., at that time, asserted that under Mr. Pendleton's managership the yarn department had never failed to make a profit.

"He has also directed with great skill the wool buying of the company and for a considerable period has been in general charge of manufacturing," the statement continued. "Thus he is familiar with the vital buying and manufacturing processes of the company."

The announcement of his election to the presidency has aroused favorable comment throughout the trade.

Referring to Mr. Noah's resignation, William B. Warner, chairman of the executive committee, said:

"Mr. Noah's resignation did not come as a surprise. The board has been aware of the fact that for some months he has continued in office against the advice of his physician. Because of our sincere personal regard for him, we feel compelled to accede to his request that he be relieved of his duties at once. Mr. Noah was elected president of the American Wool Co. in February, 1931, and he has served during a most trying period in our industrial life. Due to the soundness and energy of his administration, the company has developed into a position of strength and progressiveness far greater than it was when he became president. . . . We regret that Mr. Noah cannot remain to see the enterprise grow in strength and soundness under his progressive administration."

Queen Mary's Draperies

HERE ARE SHOWN three striking drapery fabrics which adorned the lounges of the Queen Mary as she steamed up the Hudson River on her maiden trip last month.

The cloth in the upper corner, which is used to decorate the third-class lounge, is both a jacquard weave and a print. The white rayon warp so generously covers the natural-color cotton slub-yarn filling that the use of the novelty yarn seems hardly necessary, but the vogue for such yarns seems as strong in England as here and draperies must contain them. The fabric is reported to sell for $5.00.

The three rolls of fabric across the center of the photograph are all the same material, the two top rolls being portions of the rich matelassé face and the bottom roll being a portion of the back. The face has a gray-colored, yarn-mercerized, cotton warp and a fine, tan, cotton filling which is almost completely concealed by the warp. The back fabric has a fine cotton warp and two picks of medium-size, black-dyed, worsted yarn alternating with one pick of heavy, natural-color, mohair yarn. The black worsted is stitched through the face fabric to pin down and border the edges of the white figures or ridges; while, when it is on the back, it serves to push up the mohair against the face fabric and give the ridges a genuine stuffing. The back warp comes discreetly through to the valleys of the face at intervals, to assure that the two parts are firmly bound together. It is a fabric to warm the technician's heart. Price? Oh, yes—$18.00 per yard.

Last is a cloth of relatively simple construction, the warp being a bright-blue mercerized cotton yarn and the filling a natural-color cotton ratiné. This is priced at $7.00 per yard.

Hosiery Survey...

Volume, with profit, is goal of new study

By Earl Constantine
Managing Director, National Association of Hosiery Manufacturers

AT THE last annual meeting of the National Association of Hosiery Manufacturers, a proposal was unanimously adopted that the association proceed, during the coming year, with an analysis and study of the industry. Broadly, the aim of this study is to seek some solution of the generally unprofitable condition of the hosiery industry today.

During recent years the profit position of the hosiery mills has not been commensurate with their increasing volume of business. Let us scan the fundamental picture briefly. The largest unit consumption of hosiery is in ladies' hosiery. Some 15 years ago, by an almost overnight development, the American woman changed from seamless to full-fashioned, which in turn started a wide displacement of circular machines by full-fashioned machines in the mills. This displacement was so extensive that by 1931 or 1932 at the latest, not only was the seamless branch overloaded with equipment but similarly the full-fashioned branch found itself overloaded.

Out of these conditions came exceptional over-capacity to produce and all the distress resulting from such a condition. However, over-capacity alone does not explain the present difficulties. The industry's rapid expansion brought into the manufacturing field many knitters who had mechanical skill but not always commensurate executive and merchandising experience. Many such plants were undercapitalized, and therefore were hard put to meet maturing paper when sales fell off. Naturally, out of that came below-cost selling which weakened the entire market, the well-financed as well as the poorly financed.

From the unsatisfactory condition of 1932, we went to the code year of 1933; the abnormal demand of that year produced profitable business. In 1934, business improved over the pre-code depression years, and, operating under code regulations, competition was reasonably fair and the industry got along quite well. In 1935, there was a trend back toward acute competition; unit consumption set a record, but profits did not reflect that increase.

In 1936 we find acute competition coming on apace, and generally speaking all branches are unprofitable. Those charged with the responsibility of doing an industry-wide planning job cannot sit by complacently, watching the instability just described without taking definite steps that might lead in the other direction. With such aim in view the association authorized analysis and study.

Progress toward enactment of the project so far has been as follows: The officers and directors of the National Association held a special two-day meeting, June 10-11, at the Waldorf-Astoria Hotel, New York. This meeting which was devoted to developing ways and means for the survey, was in all respects stimulating and constructive. It was marked by very frank expression; the discussion brought out many suggestions and interesting clashes of opinion—always a healthy sign in evolving plans for a task of this kind.

The board of directors authorized the president to name a committee of seven to direct the survey. This committee was selected from the board. It represents some of the best experience, judgment, and intellect in the hosiery industry, and includes two former presidents of the National Association who are still active in the industry. The committee comprises: John Wyckoff Mettler, president Interwoven Mills, Inc.; William Meyer, president Apex Hosiery Co.; Austin H. Carr, president Durham Hosiery Mills; Charles Chipman, president Chipman Knitting Mills; H. L. Van Praag, president Julius Kayser & Co.; Wm. H. Gosch, president of the National Association, and Earl Constantine.

This committee will consult from time to time with the presidents or other executives of the regional and divisional associations in the industry, such as the Southern Association of Hosiery Manufacturers, the Full-Fashioned Hosiery Manufacturers of America, Inc., the Full-Fashioned Hosiery Association, Inc., and the Woolen Hosiery Institute of America. It is felt that in this way the survey committee will be able to reflect a sufficiently wide range of viewpoints and observations as to result in giving the industry study the best possible guidance and resultant. The first meeting of this new survey committee was held at the New York offices of the National Association on Tuesday, June 30. As an outcome of that meeting the staff of the Association has been set to the task of assembling all available information essential to the project.

The survey committee is authorized to employ the services of outside agencies or specialists to the extent it deems desirable. Contacts have been established with a number of leading engineering and accounting firms, and it is possible that services of various firms may be drawn upon for various phases of the study.

The survey will have two chief divisions: First, to catalogue the difficulties which account for the industry's ill health; second, to prescribe a method of treatment.

In a sense, this study is a pioneering task. While there has been a large volume of single-company studies in all industry, and on occasion a given industry as such has made a study of markets and possible expansion, etc., there apparently is very little precedent for the type of undertaking under consideration by the hosiery association at this time. It is in the nature of analyzing the major general problems of the industry and attempting to suggest methods and policies which, if generally applied for a reasonable period, would produce improvement and increased stability for the industry as a whole and therefore for most of those who constitute it.

In the above, I have tried to indicate the process of our survey. The big point to remember is that the industry must be willing and even anxious to cooperate with the leaders. Without such understanding and cohesion no good can result. With it, mountains can be lowered and valleys raised.

A Billion a Year!

Factoring business estimated to have doubled since 1929

SINCE the first of the textile importer's financing agents was established in this country back in the days when Thomas Jefferson was President, until the uphill turn of the depression started several years ago, the "factor" was a part of the textile industry's stage-set and unknown in other fields. In the last five years the factor has expanded his activities in textiles and branched effectively into numerous other industries on such a scale that it is estimated that his total sales have about doubled their 1929 volume and that a billion dollars worth of business is being factored in 1936.

There are only some 16 or 20 houses which might be classed as "factors" in the accepted sense, and the lion's share of this business is done by some five or six. The prime function of this cross between merchant and banker is the purchase of his clients' receivables for cash. The method whereby this is done and the related operations, make this century-old participant in the commercial cycle a live and growing element in modern business. This service is available to any manufacturer selling the retailer, chain store, wholesaler, or such other houses as are subjects of credit information. The preferred account is one which sells a widely used article in not too small unit orders, and which runs a total of several hundred thousand dollars annually as a minimum. The cost to the client is based on a 6% interest rate which is charged on moneys advanced, and paid on balances left on deposit, plus a factoring commission which may be as low as three-fourths of 1% on a business totaling $1,000,000 annually with 10-day bills or may exceed 3% with smaller volumes and longer terms.

Several factors have lately been notably successful in acquiring non-textile accounts. The qualifications of a prospective client are hard to define clearly, but the men in the business know instinctively. They will not take cloaks and suits, but they will take shoes; they won't touch furs, but they will take some types of hat manufacturers. Expansion outside the textile field requires lots of missionary work, but it is well on the move.

Ability to supply ready cash in a manner which improves rather than weakens the client's financial position is the factor's particular contribution. Bank borrowing against receivables as security nets only a percentage of them, and brings a secured creditor into the picture which does not help that borrower's credit in the eyes of his other creditors. The factor converts assets otherwise frozen on the ledger into cash which may be put into the business for expansion, used to discount bills for supplies, or the like. The ratio of quick assets to current liabilities on a firm's balance sheet is normally raised by the employment of a factor, and a poor credit risk on the basis of this asset index may thus be converted into a good one, and the advantages of improved credit enjoyed.

The factor in his dealings with his client has not the banker's viewpoint; rather it is the merchant's. His background has been both in selling and financing, but in his modern version the actual merchandising is left to the client, subject to counsel as and when asked for. The factor leaves the manufacturer free to guide his production and sales, with the advantage that his customers are in effect always cash customers. The factor supplies cash on presentation of invoice and shipping papers. The bills are payable direct to the factor.

Corollary to the purchase of receivables by the factor and a part of the necessary approval by the factor of the solvency of the manufacturer's customers, is his checking of their credits. The client is relieved of all credit details, the factor taking responsibility for payment and standing all the losses arising from credit. Credit losses are no longer figured as a cost item by the producer.

The completeness of credit information in a factor's files exceeds what one single business could reasonably support. These records often suggest new prospects, or permit a larger line of credit to one customer than a seller operating independently would feel justified in extending. The manufacturer's salesmen can go out and sell every one, subject to approval of the account by the factor at the time the sale is made and checked again just before the shipment of goods is invoiced.

There has been a marked trend toward merger among the top-notch factors during the last few years. For example, Commercial Factors Corp. represents the consolidation of Frederick Vietor & Achelis, Peierls, Buhler & Co., Schefer, Schram & Vogel, and L. Erstein & Bro. Commercial Factors is a wholly owned subsidiary of Commercial Investment Trust, Inc., as are also William Iselin & Co. and Meinhard, Greeff & Co. The latter resulted from the combination of Greeff & Co. and Morton H. Meinhard & Co.; while Iselin acquired the businesses of Fred. Ludewig & Co. and Fabrics Factors Corp. in 1930 and of Passavant & Co. in 1935.

There are two factoring subsidiaries of Commercial Credit Co.—Textile Banking Co. and Edmund Wright-Ginsberg Co. Total 1935 business of Commercial Investment Trust and Commercial Credit factoring groups is said to have exceeded half of the total factored business.

Well up with these groups are such houses as James Talcott, Inc., with factoring correspondents and its wholly owned subsidiary, Barnard Phillips Factors; L. F. Dommerich & Co., and John P. Maguire & Co., the last named newly organized, but headed by a group of men well seasoned in the business. Other firms of long standing in the field, hold special niches which initiative and experience have won for them. They include—C. A. Auffmordt & Co., Bachmann, Emmerich & Co., H. A. Caesar & Co., Century Factors, Inc., Coleman & Co., Crompton-Richmond Co., H. M. Hubshman & Bro., Mill Factors Corp., Reiss Factors Corp., Rusch & Co., and Shapiro Bros. Factors Corp.

With the lean years bringing shrinkage in working capital, tightening of bank facilities, and increasing competitive pressure to gain low costs by full operation, the factor has been particularly helpful through his facilities for permitting maximum production by keeping a firm's capital almost 100% active. No wonder the doctrine of the factor is finding acceptance in such trades as shoes, paper, hats, electric appliances, pottery, leather, etc., as well as expanding further in all branches of textiles.

Factoring enthusiasts regard a billion a year as only the beginning.

Textile Mergers . . .

An analysis of those effected in cotton division since 1916

By Stephen J. Kennedy
Pacific Mills, New York

◆ *In possibly no one subject has there been a more sustained interest in the cotton textile industry than in that of mergers; and yet, on no subject of similar import has there been less information. Mr. Kennedy has made an important contribution toward correcting this deficiency by conducting a study of cotton textile financing, with major emphasis on the progress of mergers. The results have been published recently* and the attached article summarizes certain of the major facts isolated by the work.—Editor.*

THE proposal frequently made that mergers of small cotton mills into larger units are needed in this industry should be viewed in the light of what has been accomplished in this direction since 1918. In a recent study,* conducted by the writer, it has been shown that at least 43 mergers of cotton mills have been effected since the close of the war.

One striking characteristic of these mergers is the diversity of merger technique so far as organization structure is concerned. It would seem as though the proponents of mergers have been groping toward a formula by which mills could be brought together successfully. One type was that exemplified by the Lockwood Greene holding company control through ownership of a controlling stock interest. Another type is that indicated by the Consolidated Textile Corp., which envisaged the outright purchase of new mills as going concerns. The Berkshire merger illustrates the horizontal merger of competing interests directed toward the reduction of competition. United Merchants and Manufacturers, Inc., is probably as close an example as we have of the so-called vertical consolidation. Alabama Mills illustrates the application of typical merger organization in the creation of a new enterprise.

A further analysis of these 43 mergers indicates that 27, or 63%, were horizontal in character, that is, mergers of mills making the same general types of goods, and 16, or 37%, were along vertical lines. Subsequently, six of the so-called horizontal mergers acquired their own finishing plants, thereby taking on the nature of vertical organizations.

Analysis of the results which have been attained by these mergers seems to indicate that structural organization, whether horizontal or vertical or some variation thereof, has been of secondary importance in their success to the basic factors of the financial strength of the mills comprising the merger and the character of the mill's product. Under conditions such as have prevailed in the industry during the last decade, the imposition of fixed-interest charges resulting from the issue of securities in connection with the merger has probably played a larger rôle in the success of such new organizations than any other factor. This applies whether the issue of such securities was the result of a need for new capital investment either in plant or working capital, or in order to buy out a recalcitrant minority of stockholders.

*"Profits and Losses in Textiles: Cotton Textile Financing Since the War"—Harper & Bros., $3.50

To finance the 26 mergers where recourse was had to the capital markets, a total of $122,000,000 of securities was sold to investors. The classes of securities were:

	Number of issues	*Amount*
Bonds and notes	13	$ 40,050,000
Preferred Stock	15	52,173,738
Common Stock	5	29,830,841
		$122,054,579

In contrast to these mergers financed by the sale of securities, there was a total of 17 additional mergers which were completed by the simple exchange of securities without outside financing. In large part such mergers represented the gradual expansion of strong well-managed firms through the acquisition of other mills.

The relative success of these two types of mergers as distinguished by this fundamental distinction of whether or not they were self-financed or financed by the sale of securities is a striking commentary upon merger technique. Of those which sold no securities, only one subsequently required financial reorganization. On the other hand, of the 13 consolidations which issued bonds or notes, six had subsequently to undergo a financial reorganization. In four cases either the amount or character of the security issues was changed and in the two other cases, the issue was refunded at lower interest rate. Also, out of 11 additional mill mergers, which issued preferred stock but no bonds, five were subsequently reorganized or liquidated. This makes a total of 11 out of 26 mergers requiring outside financing which had later to be reorganized at a loss to the equity-holders.

To what extent further consolidations can be effected in the textile industry along the lines of companies like Callaway Mills and Cannon Mills by the process of gradual expansion and eventual consolidation of holdings is a basic question in any consideration of further merging of cotton mills. Where diverse ownership or the under-financed character of some of the constituent mills necessitate security flotations, it may be difficult to avoid fixed charges which under present conditions in the industry might be likely to endanger any possibility of success.

If we are to look for further moves toward concentration of control in this industry through the physical merger of properties, it would seem desirable to avoid the use of any form of security which would interfere with further financing through the sale of the common stock of the company. It does not necessarily follow, however, that the type of concentrated control which will eventually be developed in this industry will follow the lines of physical merger. There has been in this industry for many years a measure of control exerted by the New York selling houses. It is possible that through changes in the relationship between the manufacturing and selling organizations, and through further changes in the latter specifically, an expansion and modification of this type of control might be provided which would obviate the necessity for a physical merger of plants.

Textile Graduates

In demand as schools release this year's crop

TEXTILE education made long strides, during the school year just closed, in the direction of long-term planning, thanks to the program being conducted under the auspices of the Textile Foundation. There was no let-up in the immediate job of turning out trained men for the textile industry, however. The schools report progress in number of students enrolled, and in the demand for graduates. In fact, from reports received from the various deans, it is apparent that the supply cannot meet this call.

Outstanding facts concerning graduation at the various institutions are given below.

ALABAMA POLYTECHNIC INSTITUTE, AUBURN, ALA.: Graduated nine students, against eight last year. Principal speaker at graduation May 25 was Dr. Guy E. Snavely, president of Birmingham-Southern College. Dean E. W. Camp reported that several of the graduates were placed in jobs before graduation and others were being considered; he believed all would find employment at an early date. One of the principal honor students among the graduates was Lee Ross Ellenburg, who made several honor societies including Tau Beta Pi.

BRADFORD DURFEE TEXTILE SCHOOL, FALL RIVER, MASS.: At graduation May 29, 26 students received diplomas, as compared with 32 last year. Principal Henry W. Nichols reports that the number of inquiries the school is receiving for graduates this year exceeds the number for the last few years. Principal address at graduation was by Dr. Zenos E. Scott, president of State Teachers College, Bridgewater, Mass. National Association of Cotton Manufacturers medal was awarded to Marcel A. Castonguay, of Fall River.

CLEMSON AGRICULTURAL COLLEGE, CLEMSON, S. C.: Textile school graduated 33 students on June 2, against 31 last year. Demand for graduates continues strong, as it has been for the last eight years; supply does not meet the demand, according to H. H. Willis, dean. F. H. Jetar, a Clemson graduate, who is editor of Extension Service, Department of Publications, N. C. State College, Raleigh, N. C., delivered graduation address. T. B. Roach was awarded National Association of Cotton Manufacturers medal. C. O. Stevenson received the *Textile Colorist* award.

GEORGIA SCHOOL OF TECHNOLOGY, ATLANTA, GA.: A. French Textile School graduated eight seniors on June 8; principal speaker was Maj. Gen. George Van Horn Moseley, commanding 4th Corp. Area. Attendance as a whole at the school has been much larger than last year. All of the graduates have been placed, and more requests were received than could be filled, states C. A. Jones, director. National Association of Cotton Manufacturers medal won by Daniel M. Holsenbeck, Jr.; Cotton Manufacturers Association of Georgia medal won by Hansford Sams.

LOWELL TEXTILE INSTITUTE, LOWELL, MASS.: Had 30 graduates as compared with 31 in 1935. William H. Timbie, of Massachusetts Institute of Technology, was speaker at exercises June 9. Emilio G. Moreno, Jr. awarded National Association of Cotton Manufacturers medal. James C. de Gruchy, Jr., awarded Louis A. Olney book prize. President Charles H. Eames, in his address of welcome, called attention to the fact that Feb. 1, 1937, will mark 40th anniversary of founding of Lowell Textile Institute. More inquiries for graduates received this year than last.

NEW BEDFORD TEXTILE SCHOOL, NEW BEDFORD, MASS.: Graduating class included 24 who were awarded day diplomas as against 25 last year; nine received day certificates, same as last year. Franklin W. Hobbs, chairman of Textile Foundation and president of Arlington Mills, was principal speaker at graduation exercises June 5. Principal Joseph H. Handford reported a healthy demand for the graduates of the school and stated that every day new requests are coming in. National Association of Cotton Manufacturers medal awarded to Andrew C. Adams; William E. Hatch medal to Albert Louie; Peter H. Slater medal to Robert W. Gardner.

NORTH CAROLINA STATE COLLEGE, RALEIGH, N. C.: Textile School graduated 49, as compared with 37 last year. Dr. B. E. Geer, president of Furman University, Greenville, S. C., and formerly president Judson Mills, was principal speaker at graduation June 8. Dean Thomas Nelson reports that demand for the graduates is excellent. Of this year's class, two will continue their work for advanced degrees and the others are all placed; in fact there are more requests than the school can fill. Robert L. Rogers was awarded N. A. C. M. medal

PHILADELPHIA TEXTILE SCHOOL, PHILADELPHIA, PA.: Commencement exercises were held at the school June 4. Dr. E. W. France, director, presented the diplomas, certificates and prizes. There were no addresses. An excellent exhibition of the products of the year was on display and created many favorable comments. James E. Dougherty was awarded National Association of Cotton Manufacturers medal. Alumni Association met June 4; William Lyle Holmes, Jr., elected treasurer succeeded Willis Fleischer, who had held this position 18 years. Bradley C. Algeo re-elected president.

RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE, R. I.: Textile School's part in graduation exercises May 27 included awarding of Southern New England Textile Club scholarship to Raymond Johnson; and Esmond Mills prize for blanket design to Kenneth C. Pearsall. Rollo Walter Brown, author and lecturer from Ohio, was principal speaker. William D. Fales is head of the department of textiles of this school.

TEXAS A. & M. COLLEGE, COLLEGE STATION, TEXAS: Textile School graduated 4 students, against 5 last year. Col. Clarence Ousley, journalist, of Fort Worth, Texas, was principal speaker at the graduation exercises May 30. J. B. Bagley, head of the textile school, reports that all the textile graduates have been placed.

TEXAS TECHNOLOGICAL COLLEGE, LUBBOCK, TEXAS: Department of Textile Engineering graduated 5 students, same number as last year, and may have two additional men finish in August. M. E. Heard, acting head of the department, reports that all the textile graduates are placed. National Association of Cotton Manufacturers medal awarded to L. E. Parsons, and *Textile Colorist* medal to James Spencer. Principal speaker at graduation June 8 was Harry Hines, chairman of State Highway Commission of Texas.

Textile Personalities

HYMAN L. BATTLE, treasurer and manager of the Rocky Mount (N. C.) Mills, has an interesting dual contact with the past and the future. He represents tradition in that he is a great-great-grandson of the Joel Battle who founded the mill in 1818. All around his office are mementoes of the old days; from his office window he can gaze upon a beautiful row of boxwood which breathes the very spirit of pioneer America.

And yet, he serves the cause of modernism in that he has revamped his whole plant, and has installed equipment representing the last word in efficiency. In other words, tradition seems to inspire him to go places, rather than inhibiting him, as it so often does.

Mr. Battle has spent most of his life in Rocky Mount. He was educated there and at the University of North Carolina. From 1917 to 1919 he was in the Army—a sergeant in Motor Transport. He joined the Rocky Mount Mills in 1919 as supply man—thus preventing a break in the record of management of the mills by direct descendants of the original founder. At that time his father, Thomas H. Battle—who has since died—was treasurer. Hyman Battle succeeded to that post in 1933. One of his hobbies is fishing but by this we don't mean the mild sport with which most of us are familiar. From pictures in his office, we gathered that he goes after what they call in the movies "monsters of the deep." But most of his time he spends running his mill and selling its product—for he does both.

People are apt to speak slightingly of even the third generation in an industry. They might take a look at the fifth in Rocky Mount; it hasn't started to slip yet.

OUR candid camera goes everywhere—no respecter of persons or occasions. This time we interrupted a fishing trip to snap Daniel Rheinauer, president of New York Knitting Mills. The story of Daniel Rheinauer and that of the knitted outerwear industry are closely allied—indeed it is somewhat difficult to think of one without at the same time including the other.

Here is Dan Rheinauer's tale in thumbnail form. A real "Sidewalks of New York" man. He was born in that city in 1875 and has lived there ever since. He entered the textile industry as a jobber in 1900. In 1902 he began making knitted outerwear under the trade name of New York Knitting Co. The firm was incorporated in 1926 and since then it has held a high position for style and quality in the outerwear field.

Mr. Rheinauer is industry-minded, as witness his record of service with the National Knitted Outerwear Association: treasurer for 7 years; national president for 3 years; director for 5 years. Amusements? He enjoys his business about as much as anything. Recreations? He has two—fishing, and long country hikes with his dog "Tres Joli." Incidentally the dog is an import, being a native of Mentone, France. We might add, too, that this canine is the pride of the Rheinauer household and Mr. Rheinauer's cherished pal.

Dan Rheinauer's story would not be complete without mention of the brilliant way he rebuilt his business after the depression had cut it virtually in half. Today he is back in his accustomed place as an outerwear leader—a place which, as his friends in the trade will gladly tell you, he has well earned.

THE textile industry knows Ernest C. Morse as the man who has been identified with two of the major industry-wide promotional campaigns: that of the Cotton-Textile Institute when it launched its New Uses Section, and that of the Associated Wool Industries of which he is now general director. What is not so generally known by textile men is the fact that Mr. Morse directed one of the most gigantic sales in history: that of surplus property of the War Department after the World War. As assistant director of sales, and later director, he liquidated two billion dollars worth, on basis of cost valuation, and secured a return of 65% of that cost!

In fact, it was his experience in that job which helped lead him in the direction of promotional activities. He had appeared to be headed for other things, having graduated from Worcester Tech. in 1905 with a B.S. degree, and acquiring a degree in electrical engineering in 1909. From the hard-boiled engineer's standpoint, he went wrong right away, becoming a sales engineer for Westinghouse and staying that way for 12 years. In 1918, he went to that company's Washington office—and then was drafted into the Construction Division of the War Department. From there (in January, 1919) he went to the surplus property job previously mentioned.

Mr. Morse's textile connections have included the cotton and wool promotion jobs previously referred to, and—in between—several years service as manager of the Cooperative Merchandising Department for American Bemberg Corp.

Married, one son, no hobbies (except possibly gardening), home in Larchmont, N. Y., is the way he sums up his personal side. But how he likes to work!

Plenty of trouble for those who follow mere rule or precedent in

By A. K. Landau
Saco-Lowell Shops, Boston

SETTING DRAFTING ROLLS

IN general, it can be said that no one factor will have an effect, favorable or otherwise, so far reaching in the running of the mill as the manner in which the drafting rolls are set at the different stages of processing. Setting them by mere rule, however, or because someone else has done it that way, will lead to trouble—and plenty of it. Proper settings can be attained only by application of the general principles underlying the art to the particular case in hand.

The principal factors governing roll settings are the length and character of the cotton staple as the mass of fibers is being processed. Before the drawing action of the rolls can be considered, we must have a clear conception of the fibers passing through them, remembering that the preparation of our small sample tuft by hand sorting has given us a set of fibers of fairly regular length and almost parallel. This is a condition, however, which will not exist in the stock being processed, as the short, curled, bent, or immature fibers will be present to an extent depending on the kind and effectiveness of the preparatory processes.

Fig. 1 represents a staple diagram of 1-in. Mississippi cotton. Fig. 2 is a similar curve for $1\frac{1}{8}$-in. Mississippi cotton. These diagrams show that under the best conditions a large percentage of the fibers will be in a floating or uncontrolled state, even with the most ideal roll settings, unless special methods are used to control them.

Breadth of Nip

There is one more matter we must consider before proceeding with the factors governing setting, and this is the point of contact of the rolls. The point of contact depends on the longitudinal fluting of the bottom, steel roll and the flexible character of the top-roll surface. Under the pressure of the weighting, the top-roll surface yields and thus maintains contact with the steel roll to a degree affected by the diameters of the rolls, the weighting, and the character of the roll surfaces.

It is quite easy to ascertain the extent of the contact breadth by taking an impression with a thin carbon paper placed between the rolls in question. A test of this nature will show that in the ordinary spinning frame, with rolls 1 in. in diameter, the breadth of this contact or nip is about $\frac{1}{8}$ in.

Theoretically, this contact is not uniform throughout the entire distance, but it is a decided factor in the fiber control. This can be seen by reference to Fig. 1. Under ordinary conditions, with medium counts of yarn and corresponding roving, both the middle and front rolls will have a decided control over the strand to the point where the clearance of bottom and top rollers does not exceed 0.03 in. At the middle roll there will be a definite retarding force, while at the front roll there will be a pulling force. These forces will depend upon the mass of fibers at the nip of each roll, so it is safe to assume that the control distance may be at least $\frac{1}{4}$ in. less than the setting distance and that, after making allowance for the lessening of the fiber tension between these control points, all those fibers which are only slightly longer than the control length will be drafted in a satisfactory manner. If the breadth of the roll contact surface is increased, and the pressure kept constant, it will help the conditions of control and create better drafting.

The surface of the rolls seriously affects the setting distance, since the yield of the properly covered leather roll permits a greater spread than if a bare metal roll were used. Similarly, the texture of the leather and the roll under-covering, by affecting the yield, will have a definite effect on the breadth of the contact.

When it comes to establishing an actual setting in any of the various machines, the following factors, in addition to those already mentioned, must be considered: the amount of draft, the twist, the speed of drafting, the tension in front of the delivery rolls, and the conditions of the rolls themselves.

Staple Length

There is an approximate relation between staple length and roll spread, but it is indefinite. When the rolls are definitely weighted, it is usual to set them just outside the staple length, to a distance which will vary in the different drafting stages, according to the mass of the fibers in the material being drafted.

In the spinning frame, with the settings approximately equal to the staple length, there will always be a small, though varying, number of fibers which will exceed the setting distance. It does not follow that these long fibers will all be damaged or broken, since the hold of the spinning rolls will allow some of them to slip through the middle rolls. The number of fibers held in tension and gripped between the nip of the front and middle rolls, with the rolls set equal to staple length, will be small, probably not exceeding 5% of the total.

On the other hand, in the roving frame the conditions will be different. Here, the mass of fibers will be from 10 to 15 times greater; and where, for example, in the spinning frame there would be 6 long fibers, in the roving frame there would be from 60 to 90. Settings on the roving frame, therefore, must be wider, so that interference with the drafting may be lessened. The same line of reasoning must be followed with reference to the intermediate and slubber, as well as to the drawing frame. It is important to remember that any increase in the bulk or mass of the fiber, as well as any increase in the proportion of longer staple, always requires a wider setting.

Another factor that must be duly considered in establishing roll settings is the irregularity of the staple. All cottons vary in the amount of this irregularity; and, in making the final decision, the number of fibers which would be broken or damaged must be carefully considered. The short fibers are the ones which give the most trouble, as most of them are released from the second line of rolls before they come definitely under the control of the first. The uncontrolled and irregular movement of these short fibers is the cause of unevenness in the yarn. During drafting, some of the longer fibers are being drawn forward under tension at a comparatively high speed by the front roll, while other fibers of the same kind are moving forward at middle-roller speed—these two conditions existing first in increasing

and then in lessening degree as the staple passes forward. The effect of these varying forces is the displacement of the short fibers. They are forced to the outside of the strand, and their protruding ends cause fuzzy yarn.

When using the conventional three-roll system with definitely weighted rolls, it is best to use low drafts for these irregular cottons. The use of the lighter roving, resulting in a better fiber control, will minimize the unevenness. A long draft on irregular cotton, with the middle roll weighted, will, as a rule, make a yarn that is weak and very uneven.

Cotton with a coarse fiber will require somewhat wider settings than normal cotton. This is necessary because of the increased internal friction and resistance of the fibers being drawn through the mass, and because of the better grip of the front rolls on the thicker fiber. It is apparent that trouble will follow the mixing of normal staple with coarser staple, since each has a totally different reaction under the drafting rolls. If it is necessary to mix coarse with normal staple to get yarn strength, the results will be disappointing unless great judgment is used in preparing the mix, so that there is as little interference with the drafting as possible.

As the fibers are drafted, they are greatly disturbed in their orderly relation. The greater the draft, the more the internal disturbance. Thus a draft of fifteen will have a greater disturbing effect than one of eight, due (1) to the speed at which the fibers are drawn from the mass and (2) to the fact that they are under the drafting influence for a longer time. This unsatisfactory condition is mitigated somewhat by the fact that the front rolls have fewer fibers to draw at the longer draft, so that the rolls can be set a little closer—thus to a slight extent reducing the unevenness in the final yarn.

The slower the speed of drafting, other conditions being equal, the more uniform and smoother will be the material drawn. This comes about from the reduced fiber friction at the lower speeds, better control of the fibers, and the lessened disturbance. There is less static under the condition of reduced speed, and consequently less internal disarrangement in the strand.

Tension in front of the delivery rolls may have some effect on roller settings in the spinning frame, although the effect may be indefinite and inconsiderable. The tension may come through change in bobbin size, traverse length, and traveler pull. Any change in tension at the front roll, whether intermittent or continuous, has an effect on the drafting through the retarding or accelerating of the drawing action, and this detail must be closely scrutinized when determining causes of yarn unevenness.

Suggested Drawing-Frame Roll Settings for Carded Cotton

Staple Length	Fluted Rolls			Metallic Rolls		
	1 to 2	2 to 3	3 to 4	1 to 2	2 to 3	3 to 4
7/8"	1 5/16	1 3/4	1 5/8	1 3/4	1 5/16	1 11/16
15/16"	1 3/8	1 5/16	1 11/16	1 3/16	1 3/8	1 3/4
1"	1 3/16	1 3/8	1 3/4	1 1/4	1 7/16	1 13/16
1 1/16"	1 1/4	1 7/16	1 13/16	1 5/16	1 1/2	1 7/8
1 1/8"	1 5/16	1 1/2	1 7/8	1 3/8	1 9/16	1 15/16
1 3/16"	1 3/8	1 9/16	1 15/16	1 7/16	1 5/8	2
1 1/4"	1 7/16	1 5/8	2	1 1/2	1 11/16	2 1/16

Harsh cottons, such as Arkansas or Arizona, require wider spreads than soft cottons, such as Mississippi or Georgia. Heavy slivers, old rolls which have lost their sharp-edged flutes, light weights on top rolls, high speeds, and low humidity also require wider spacing.

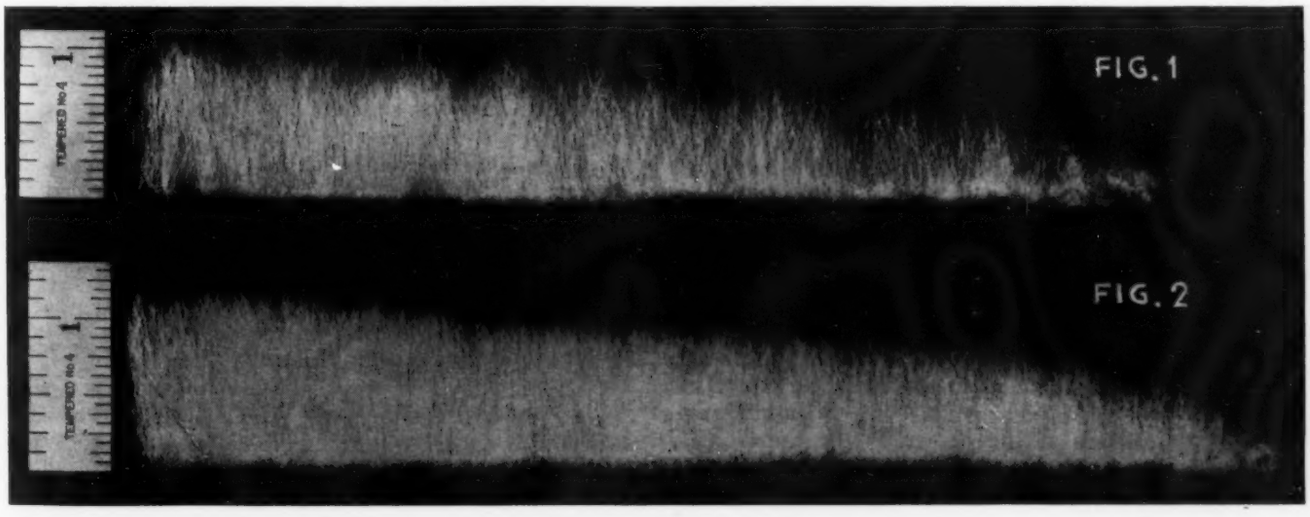
Nevertheless, remember that the closer the setting at the front, the better the control of the short fibers and the more uniform the sliver, provided there is no slippage. Slippage is not a uniform phenomenon and may be caused by condition of rolls, weighting, speed, character of cotton, lack of blending of cotton, and others factors. Thus, it is frequently found necessary to widen the spread to take care of one of the above conditions, even at a sacrifice of general uniformity.

This table prepared by R. M. Jones, research engineer, Saco-Lowell Shops.

It is very important to keep the rolls in good condition, if best results in drafting are to be obtained. This is particularly so with close settings. The gradual wear of the front roll reduces its drawing capacity to a point where definite drafting becomes impossible. The condition and kind of roller cloth, the tannage and quality of the skin, the manner in which it is applied, the care given the rolls, and the condition of the traverse, all have an effect on the draft.

No matter how the spinning rolls may be set, the most satisfactory method of spinning today is through the employment of controlled- or better-drafting systems, of which there are several in general use. In these systems, definite means are assured to control the large percentage of floating fibers and in this manner reduce fiber distubance to a minimum. But whether long or regular draft is used, the rolls and their arrangement and setting still demand attention.

Some of the better-drafting systems employ what amounts to a universal setting for all staples and fibers, while others must be adjusted to the staple and character in the same manner as with conventional systems. No matter what system is employed, the care and attention given the rolls will be reflected, to a great degree, in the final yarn.



Time-study chart for use in rate setting on new styles of full-fashioned hosiery.

KNEE-HIGH LEGGER TIME STUDY ON BLANKS 3/23/36

A	B	C	D	E	F	G		H		I		J		K
OPERATION	COURSE READING	INTERVENING COURSES	SUMMARY	DIPS	COURSES PER MINUTE	CONTINUOUS TIME		THEORETICAL COURSE AND DIP TIME		SERVICE TIME		IDLE TIME		REMARKS ON IDLE TIME
Start up 50/1						10	50			2	66		56	3 drop stitches
Enter 4-thread	4	4			43						51			
Picot	20	16		1					02					
Picot	23	3		1					02					
First inch	43		43		43			1	00					
Leg narrowings	216	193		16	50				32					
Enter splicing	536	320	493		50			9	86		59		39	Bobbin out
First step	572	36												
Enter heel	656	84			43						55			
Heel narrowings	713	57		7	43				16					
Loose course	740	27												
Take off set	760	20	224		43			5	21	2	35			
		760	760	25		11	14	16	59	6	66		95	

CARRIER NUMBER	THREAD DENIER	TURNS	USED FOR
1	4 13/15	15	Leg
2	4 13/15	15	Leg
3	4 13/15	15	Leg
4	50/1		Top
5	8 13/15	5	Splice
6	8 13/15	5	Splice

TEXTILE MACHINE 42-GAGE 3-CARRIER 20-SECTION 392-NEEDLE

Stop watch

Service time	6.66
Running time	16.59
Idle time	.95
	24.20

Regular watch

Start	10 hr.	50 min.
Finish	11 hr.	14 min.
		24 min.

Time studies on knee-lengths give basis for computing

HOSIERY RATES

By M. G. Berg
Ajax Hosiery Mills

EVERY new style presents a problem of rate setting in the full-fashioned hosiery business. A slight change from the conventional structure is easy to adjust, as it merely means the addition or subtraction of courses or changes away from the basic. However, an entire deviation from the regular run of mill numbers calls for a more complicated computation. The knee-length hose, for example, eliminates a few basic elements in construction that make it extremely difficult to build up a rate from the usual style. Time study seems to be the one equitable solution.

There are several types of knee-length construction. These are: (1) the short-welt turned style in which the rubber is inserted between the outer and inner wall of the welt; (2) the looped-on elastic type; (3) the topped-on elastic style; and (4) the sewed-on elastic style. The illustration shows a time study of the fourth variety, which permits the elastic band to be sewed on by a three-needle Fastlock machine.

In Column A of the time-study chart are given all the changes necessary on the machine, while Column B gives the course readings at each point of the construction. The intervening courses are given in Column C. The summary in Column D and the dips in Column E, divided by the speed of the machine (Column F) allows for the theoretical computation in Column H. From this, we get the running time as 16.59 min. The service time in Column I and the idle time in Column J are taken by a stop watch graduated into one-hundredths of a minute. Column G shows continuous time, which is taken by a regular pocket watch simultaneously with the stop watch. The sum of the idle and service time subtracted from the continuous time gives a check on the running time.

As this study was taken on a 20-section legger, 20 stockings are made every 24.2 min. However, there should be some allowance for extra contingencies which may arise. This allowance is arbitrary, and we shall set it as 10% of the service time. Thus, we have 20 stockings every 24.86 min. For the sake of simplification, in setting up this example, we shall assume that it takes 25 min. for each set. Each stocking, therefore, takes 1.25 min. In a 40-hr. week, there are 2,400 min. Accordingly, production in a 40-hr. week is 2,400 ÷ 1.25 = 1,920 stockings, or 80 doz. pairs.

The lower left-hand side of the chart shows the carrier set-up; the lower right-hand side gives a summary of the time. To complete the piece rate, the dozens produced should be divided into the desired weekly wage.

COTTON ORGANIZATIONS . . .

Calculations for 6s, 13s, and 22s yarns, with long-draft modifications

By Gilbert R. Merrill
Lowell Textile Institute

◆ *Now in this third article of his series on machinery organizations, Professor Merrill discusses the working out of several specific calculations, having prepared the reader in the May and June issues by explanations of draft and count ranges, spinning capacities, twist contractions, and waste losses. The calculations he gives here do not complete these particular organizations, however, as determining the amount of machinery necessary to give a balance among operations remains to be discussed in a later article. Next month he will take up an organization in which combing is involved.*

THE following organization is for a yarn suitable for towel filling, bedspread filling, soft ducks, denims, and similar products. With this count but one roving operation is necessary, and single roving may be used in spinning. While either one or two drawing operations may be used, the mill which served as an example for this organization used two operations. Using a filling twist multiplier of 3.75 gives a spinning-twist contraction of about 5%.

One roving operation. Single roving in spinning.
Two drawing operations. 5% spinning contraction.

Contraction 5%	.95)	6.00
Spinning draft ...	10.5)	6.32 at front roll.
Slubber draft	4.32)	.60 -hank slubber.
		.139-hank or
		60-grain drawing sliver.*
		6 ends up.
Drawing draft	6)	360
		60-grain first drawing sliver.
		6 ends up.
Drawing draft	6)	360
		60-grain card sliver.
Card draft		103
Card waste 7%	.93)	6180
	437.5)	6645 grains
		15.19-oz. lap, called 15.25.

Horizontal opener
Vertical opener
Buckley opener
Bale breaker

* $\frac{8.33}{\text{Hank roving}}$ = Grain sliver, or $\frac{8.33}{\text{Grain sliver}}$ = Hank roving. For example, $\frac{8.33}{.139 \text{ hank}}$ = 60-grain sliver.

For 13s Sheeting Yarn

The following organization is one used for yarns of about 13s count. It may be modified to spin counts varying from 11s to 15s. These yarns are produced for coarse sheetings, which are used in great quantities for domestic consumption, for the rubber trade, and for coating and mechanical uses. Such fabrics go into children's clothes, aprons, house dresses, work clothes, roller shades, rubber shoe tops and linings, bags, strainers, hose, belts, oil cloths, auto tires, and artificial leathers for book bindings, auto tops, and upholstery.

Cotton for these yarns varies from $\frac{7}{8}$ to 1 in. in staple and from low middling to middling in grade.

Two processes of roving are commonly used, with single roving in spinning. One or two processes of drawing are employed, depending upon local conditions. One process will be used in the following illustration.

Fabrics of this type may have the same counts for warp and filling. As the staple of the cotton is not likely to be over 1 in., the average of contraction for warp and filling will be in the vicinity of 6%.

Two roving operations. Single roving in spinning.
One drawing operation. 6% spinning contraction.

Contraction 6%	.94)	13.00
Spinning draft	7.47)	13.83 at front roll.
Intermediate draft	6.72)	1.85 -hank intermediate roving.
		.275
Intermediate doublings		×2
Slubber draft	3.63)	.55-hank slubber roving.
		.1515-hank or
		55-grain drawing sliver.
Drawing draft		6
Drawing doublings	6)	330
		55-grain card sliver.
Card draft		111
Card waste 7%	.93)	6105
	437.5)	6565 grains
		15-oz. picker lap.

Horizontal opener
Vertical opener
Vertical opener
Bale breaker

A mill manufacturing this class of yarns has recently remodeled its layout, introducing long-draft roving and spinning. Its original organization spun 13s from 1.90 intermediate roving made from .67-hank slubber roving. This shows that it was very much like the organization just given.

The new organization is as follows:

One roving operation. Single roving in spinning.
One drawing operation. 6% spinning contraction.

Contraction 6%	.94)	13.00
Spinning draft	15.37)	13.83
Roving draft	7.03)	.90 -hank roving.
		.128-hank or
		65-grain drawing sliver.
Drawing draft		6.16
Drawing doublings	8)	400
		50-grain drawing sliver.
Card draft		108.5
Card waste 7%	.93)	5425
	437.5)	5833 grains
		13.33-oz. picker lap.

Horizontal opener
Buckley opener
Buckley opener
Hopper feeders

For 22s Sheeting Yarn

Sheetings of the weights called medium and fine, which represent the large volume of the home sheeting consumption, are woven from yarns ranging from 20s to 26s warp and filling. These are sold "brown" (unbleached) or bleached—and are offered as yard goods or made up into sheets. The widths vary from 36 to 108 in., with a decided tendency to the wider widths in preference to two narrow strips sewed together. These sheetings are also used for bags, work clothes, foundations for imitation leather, rubber goods, bookbindings, and window shades.

The cottons used range from 1 in. to $1\frac{1}{16}$ in. and are about middling grade. Some mills mix up to 1 bale of spotted cotton with 7 bales of white cotton, finding that the color is sufficiently mixed to give a uniform color ef-

Three processes of roving (regular draft) are used and generally two processes of drawing.

Three roving operations.
Two drawing processes.

Double roving in spinning.
5% spinning contraction.

Spinning contraction 5%	.95) 22.00	
Spinning draft	10.29) 23.16	at front roll.
	2.25	
Spinning doublings	× 2	
Fine draft	6.43) 4.50	-hank fine roving.
	.70	
Fine doublings	× 2	
Intermediate draft	5.60) 1.40	-hank intermediate roving.
	.25	
Intermediate doublings	× 2	
Slubber draft	3.59) .50	-hank slubber roving.
	.139-hank or	
	60-grain second-drawing sliver.	
Second-drawing draft	× 6	
Second-drawing doublings	6) 360	
	60-grain first-drawing sliver.	
First-drawing draft	× 6	
First-drawing doublings	6) 360	
	60-grain card sliver.	
Card draft	×101	
Card waste 7%	.93) 6060	
	437.5) 6517 grains	
	14.9-oz. or 15-oz. picker lap.	
Buckley opener		
Buckley opener		
Vertical opener		
Bale breaker		

Long-Draft Modification

The following organization was used by a mill after installing long-draft equipment on the spinning frames. The mill continued to use three processes of roving, two of drawing, and double roving in spinning.

Spinning contraction 5%	.95) 22.00	
Spinning draft	13.23) 23.16	at front roll.
	1.75	
Spinning doublings	× 2	
Fine draft	5.83) 3.50	-hank fine roving.
	.60	
Fine doublings	× 2	
Intermediate draft	4.80) 1.20	-hank intermediate roving.
	.25	
Intermediate doublings	× 2	
Slubber draft	3.59) .50	-hank slubber roving.
	etc.	

From this point back, the organization was the same as for the regular layout. The accompanying table shows how fewer roving spindles are necessary to supply the needs of 10,000 spindles. While no process was omitted, nearly one-third of the fine spindles and nearly one-fifth of the intermediate spindles were eliminated.

Comparative Table

	Standard Organization			Long-Draft Organization		
	Size	Pounds 10 Hr.	Spindles	Size	Pounds 10 Hr.	Spindles
Spinning	22.00	.38	10,000	22.00	.38	10,000
Fine	4.50	1.85	2,097	3.50	2.61	1,486
Intermediate	1.40	7.82	501	1.20	9.47	414
Slubber	.50	24.00	165	.50	24.00	165

If long-draft roving should be introduced in this mill, it would be possible to use a draft of 25.18 at the roving frame and produce 3.50-hank from the 60-grain second-drawing sliver (.139-hank). In this case, 1,486 long-draft roving spindles would handle the stock, and all the slubber and intermediate spindles could be eliminated.

Inspecting machines which

By Paul W. Niles

CATCH KNITTING DEFECTS

Before it is too late

RIGID inspection of knit goods from yarn to finished fabric is the order of the day. Defects which must not be allowed to pass are large knots in the yarn, drop stitches which the knitting machine operator failed to mark, and an excessive number of holes in a 50-yd. roll of fabric which has been passed by the boss knitter. Sooner or later these will be brought to the attention of the manager, and then fur will begin to fly. Perhaps the worst thing that can happen is for the cutter to cut up a roll which has many more holes than indicated. Two machines which the writer has used to good advantage to catch defects are sketched crudely herewith.

The machine shown in Fig. 1 is exceptionally good for viewing a considerable length of fabric at one time. In operating this machine, the inspector takes an end of the cloth (held in a box or basket), throws it over a roller which is placed about 10 ft. higher than the basket, and passes it through a set of draw rolls which feed it into a second basket or pass it to a cloth-winding device.

An arc-shaped spreader is attached to the first basket to stretch the goods slightly. A bright light is thrown on the fabric from a lamp placed as shown in the sketch. With this machine, one can inspect a 100-yd. roll of cloth in about 30 min. If the lamp is properly placed and is of the correct size, it will make visible every defect in the fabric before it passes over the top roll and also will give another full view of about 1 yd. of the cloth after it passes over the roll. Thus, the inspector has two chances to see the defects and should catch at least 90% of them.

The machine shown in Fig. 2 is particularly good for detecting drop stitches. It consists essentially of a pair of rollers which draw the cloth from one basket, over a spreader, across a table, and then feed it into a second basket. Inserted in the table top is a sheet of glass under which is placed a high-intensity lamp. This machine also permits inspection of about 100 yd. in 30 min.

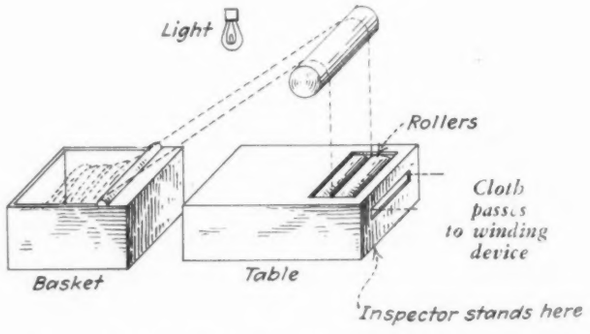


Fig. 1—Machine which gives the inspector two chances of catching defects.

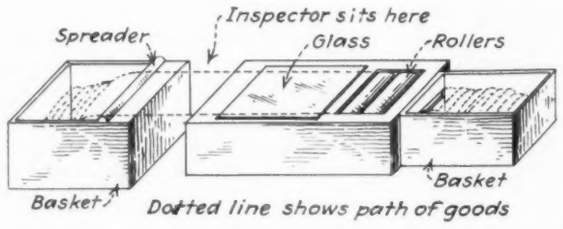


Fig. 2—Another inspecting machine. Basket is normally under table to receive the goods.

ROUGH WOOLEN CARDS

Spell disaster in blends composed largely of noils or cotton—Other causes of neps

By L. A. Crosland

THERE are five major defects or difficulties encountered at various times in the manufacture of woolen yarns, and nearly every minor difficulty can be classified under one of them. In this article the five will be outlined and the first discussed in detail. In subsequent articles the others will likewise be treated.

Here are the five in outline:

1. Neps in the carded stock. These come to the surface in the finished cloth; and, though they may be covered temporarily by the type of finish employed, they show up after a period of wear. This fault is most serious in the manufacture of such cloths as flannels.
2. Thin places in the yarn, making it weak and rendering the weaving difficult and costly. These defects are sometimes called "twits," particularly in England.
3. Variations in the counts of roping or yarn, causing difficulty in weaving and making the finished cloths variable in weight and barry in appearance.
4. Low yields of spun yarn from the weight of the blend.
5. Low rates of production.

Neps may be caused by inefficient carding, or they may be present in the blend. Blends composed largely of noils, or containing cotton, either raw or in the form of waste from certain processes in cotton spinning, are inclined to cause neps. To remove them, the following points must be considered:

1. Suitability of the card clothing for the material.
2. Condition of the clothing.
3. Setting of the rollers to each other.
4. Clearing of the cylinders by the doffers.

For a normal set with garnett breast and one-cylinder first breaker, one-cylinder second breaker, and one-cylinder finisher, the clothing specifications given in Table I may be taken as a suitable basis for blends containing the types of materials mentioned.

The condition of the card clothing is most important, as rough cards spell disaster in the carding of blends of these materials. Perfect smoothness must be obtained in the first place by careful grinding and maintained after this by correct setting. The newly ground point is not the one to be desired most of all, but it is to be preferred to no point. The ideal point is that which is obtained, after the cards have been ground, by the action of fancy on cylinder, stripper on worker, and dickey roll on doffer. Whenever possible, the fancy should be run into the cylinder as the latter is being ground, because this helps to remove the roughness caused by the action of the emery roller. Grinding should be discontinued immediately all the teeth of the card are level, too prolonged grinding causing a lip on the edge of the teeth which holds the material and so tends to form neps. A further point is that the grinding must always be performed with little pressure. If this is not done, the teeth may be loosened in the foundation, and so become straggly and tend to rise in working, causing roughness and neps.

The setting of the rollers to each other is most important. One wise old carder told the writer that there is only one rule in setting for the type of material under consideration. This is: "Set as close as is possible without the opposing surfaces actually touching." The only qualifications necessary are that on the breast the settings may be modified because of the unopened character of the material and in all cases settings must be modified according to the condition of the machine and the clothing. Actual settings for the type of machine already described are given in Table II.

TABLE I

First Breaker Card	
Garnett breast, 20 rows per inch.	
Cylinder	110/10*
Workers and doffer	115/10
Strippers	90/9
Fancy	40/4, 28 wire
Second Breaker Card	
Feed rollers and licker-in . . . garnett wire.	
Tumbler	80/8
Cylinder	125/11
Workers and doffer	130/11
Strippers	90/9
Fancy	40/5, 29 wire
Finisher Card	
Feed rollers and licker-in . . . garnett wire.	
Tumbler	90/9
Cylinder	130/11
Tape doffer	120/12
Workers	135/11
Strippers	100/9
Fancy	40/5, 30 wire

TABLE II

First Breaker Card
Breast workers and strippers to breast 13 gage by the American standard (in thousandths of an inch) or 28 gage by the British legal standard.
Workers to cylinder 10 A.S. or 30 B.L.S.
Strippers to cylinder 8 A.S. or 32 B.L.S.
Doffer to cylinder 8 A.S. or 32 B.L.S.
Second Breaker Card
Workers to cylinder 8 A.S. or 32 B.L.S.
Strippers to cylinder 6 A.S. or 34 B.L.S.
Doffers to cylinder 6 A.S. or 34 B.L.S.
Finisher Card
Workers to cylinder 6 A.S. or 34 B.L.S.
Strippers to cylinder 6 A.S. or 34 B.L.S.
Doffer to cylinder 5 A.S. or 36 B.L.S.

All the workers except those on the garnett breast should be set so that the strippers rub them lightly to keep the teeth in good condition, smooth and sharp.

The clearing of the cylinders by the doffers is most important, for neps are caused by material being rolled instead of carded. If the cylinder is not cleared, it becomes overloaded with material and rolling takes place. In order that this may be avoided, the fancy must be so set and run at such a speed that all the material is raised to the surface in order that the doffer can take it all. With the type of fancy advocated, this should be possible if the settings from $\frac{1}{16}$ to $\frac{3}{16}$ in. into the cylinder teeth and the surface speed is at least 15% higher than that of the cylinder. This is a minimum speed, and it may be necessary to gain as much as 30 or even 40% for certain materials, particularly on the breaker part of the machine. The doffer settings given will be found satisfactory if the fancies are made to work correctly and the doffers are run at the most suitable speed. This is limited to a certain extent by the necessity for the doffers on the first and second breakers having to make a sliver for the intermediate feeds and, in the case of the last doffer, by the counts of roping and the rate of production. The actual speeds used should vary between about eight and twenty revolutions per minute, according to the type of material and the rate of production.

To keep the doffers in the best possible condition, a dickey roll should be placed on each one. This roll should be clothed with old fancy clothing, should be set lightly into the doffer, and should be driven from the fancy so that it has a higher surface speed than the doffer. A dickey roll keeps the doffer teeth smooth and sharp, and also keeps the points clear.

*These figures imply 110 staples in 5 in. longitudinally and 10 staples in 1 in. horizontally—in other words, 1100 staples in 5 sq.in.

TEN QUESTIONS ON WEAVING

A cotton loomfixer asks about rowy cloth, kinky filling, and other matters

By Ivar Moberg

TEN questions submitted to TEXTILE WORLD by a loomfixer in a southern cotton mill have been referred to me, and I shall endeavor to answer each one in the same order as originally set down. Many of the subjects touched upon are of interest to loomfixers throughout the industry.

1. Setting Whip Roll

In setting the whip roll, how high should it be from the beam journals?

THE WHIP ROLL is not set to any given height from the beam journals. It should be so set that its top will be level with the top of the banks of the warp stop motion. This means that the warp coming from the whip roll to the warp stop motion should be in a horziontal line. The height of the stop motion always determines the height of the whip roll.

2. Catching of Filling

What causes the filling to catch between the picker-stick guide and the lay?

THIS QUESTION is rather hazy, as it does not state whether the filling catches during the weaving of the bobbin or at the transfer. The first-mentioned fault happens rarely, but when it does it is generally caused by one of the following difficulties: shuttle box too tight at its mouth, filling groove in shuttle worn out, picker too much worn, leather covering on box front worn out or worn rough, shuttles improperly checked, insufficient tension on the filling, or some sort of protrusion in the shuttle box. Any of these faults will give the filling a tendency to catch in the shuttle box, but it will hardly make the filling catch between the picker-stick guide and the lay. The picker-stick guide is located about 4 or 5 in. below the lay end on the battery side, and it does not seem possible that the filling would drop so far down that it would even touch the picker-stick guide.

If it is at the transfer that the filling catches on the picker-stick guide, the trouble is what is commonly known as a pull-in. In this case the cut filling from the outgoing bobbin is not pulled clearly out of the shuttle eye; and on the next pick after transfer of bobbins this end of filling is pulled out of the shuttle eye, leaving its tail end on the picker-stick guide, in the shuttle box, or part way in the cloth. To avoid this, if the old shuttle feeler cutter is used, be sure that the thread groove in the shuttle and the depression groove in the box-front leather are deep enough so that the filling can be freely pulled out of the shuttle eye by the outgoing bobbin. Also see that the bobbins in the can are always kept low so that there will be a longer drop of the bobbins. This will facilitate the pulling out of the filling from the shuttle eye. With the new Stafford thread cutter this fault does not occur, as this cutter will cut the filling very close to the shuttle eye and the end to be pulled out of the shuttle eye is very short.

3. Setting Warp Stop Motion

How high should a mechanical warp motion be set from the camshaft?

I WANT to state that, whether we have a mechanical or electrical warp stop motion, we do not set this in any relation to the camshaft. The ideal setting of any warp stop motion is such that a line drawn from the top of the banks, through the harness eyes when these are even, and to the breast beam or take-up roll is a straight line. This ideal setting is, however, seldom practical, as it will produce reedy cloth if there are two or more ends drawn in the same dent. With one end per dent it is ideal, as the tension of the warp is evenly distributed to all the threads. If we are making a plain cloth, we must set the warp stop motion above the ideal warp line to avoid reedy cloth and obtain a good cover. On certain kinds of twill the warp stop motion is often set below the ideal line. The height of the warp stop motion should be such that it will produce the best cloth. There is no standard height to be given, as this differes in different kinds of looms and for different types of fabric. Some experimenting is therefore necessary.

4. Obtaining Good Cover

How is a good face obtained on a plain cloth woven on a Draper loom?

TO OBTAIN a good cover on a plain cloth, we must raise the warp stop motion so that the top shed will become as slack as is safe without causing overshots. This will eliminate reed marks and also put a good cover on the cloth. Setting the harness cams early will also help to get a good cover. Early setting of harness cams means that the harnesses are even on bottom center of the crankshaft to half way on front center. With the warp stop motion raised so that the upper shed becomes slack, there will be a continuous tightening and slackening of the warp threads. This will force the warp threads to seek the position of least resistance, which is half way between two adjacent warp threads. The filling beaten up by the reed is also permitted to dislodge itself somewhat and is not fully beaten up before the two or three succeeding picks force it into position. At this time the reed has lost most of its control of the warp threads at this point. They are free to spread out more evenly, and the result is a better cover. This is paramount in weaving plain fabrics having more than one end per dent in the reed.

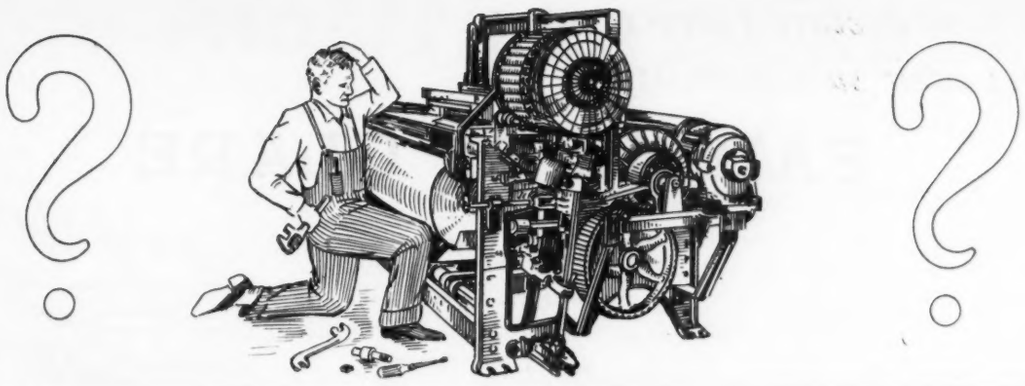
5. What Holds the Shuttle?

In running a loom without warp but with reed and shuttle, what keeps the shuttle from flying out?

THIS QUESTION could be answered in three words—"force of gravity." At the time the shuttle starts across the loom, the race board has become slanting toward the back of the loom. Since a free body will seek the lowest position, it is obvious that the shuttle, while in motion, will seek a course along the lowest position on the race board, which is toward the back of the loom. If there were no reed in the loom, the shuttle would fly out, but this would always be toward the back of the loom, since the race board slants that way. When the reed is in the loom, it acts as a guide for the shuttle, which is forced to follow the reed to the opposite shuttle box. In addition to the force of gravity, the shuttle is also made to "hug" the reed by the lateral influence during the pick. In other words, at the time of the pick the shuttle is moved transversely to the force of the pick by the backward movement of the lay. Therefore, the shuttle during the pick is given two movements, one straight forward by the pick and the other transversely by the backward movement of the lay.

To better illustrate the two forces which keep the shuttle against the reed during its course across the loom, let us suppose that we attempt to roll, or slide, an object transversely across an inclining surface. The object would seek the bottom of the incline if there were nothing to prevent it from so doing. This is what the reed does.

The transverse motion of the shuttle may be illustrated by standing on a mov-



ing train and throwing an object at right angles to the motion of the train. The object would follow the motion of the train to a certain extent. Hence the shuttle will follow the backward movement of the lay during its course across the loom.

We should never depend upon the warp to keep the shuttle from flying out of the loom. This would be certain to cause overshots, broken ends, broken shuttles, and a multitude of other faults if it would be at all possible. Before a warp is placed in the loom, we should make certain that the loom will run perfectly with shuttle and reed only.

6. Rowy and Wavy Cloth

What is the cause of the loom making rowy and wavy cloth?

CAUSES OF rowy cloth include faulty let-off and slipping take-up. Mostly the let-off is at fault, in that it will not let off evenly. Other causes are bent beam gudgeons, broken brake drums, and poorly balanced loom beams. See that the friction chains do not rub against the beam flanges or ride on the flanges of the brake drum, as uneven let-off is likely to be the result.

Wavy cloth on plain construction is generally caused by insufficient tension on the warp. This causes the cloth to pucker up at the beat-up of the filling. To get a smooth and even plain cloth, the tension on the warp must be enough to prevent the cloth from puckering or beating back with the reed. I do not know what kind of plain fabric the inquirer produces, but the latter fault is especially frequent when weaving duck and poplin, in which there are a heavy sley and pick. Of course poorly made warps will also cause a wavy effect on plain cloth, but this is rather rare. If the wavy effect appears at the selvages, only the temples are at fault and need adjustment.

7. Cords and Other Defects

What causes a loom to make cords in the cloth, ropy filling, kinky filling, and also knock-out of the filling?

CORDS IN the fabric might be caused by slack or coarse ends in the warp and also by improper setting of the loom. Reediness, as discussed under question No. 3, will also give a cordy effect in the cloth.

Ropy filling may be caused by poorly made filling bobbins, too harsh a pick, or improper checking of the shuttle. Any of these faults will cause the filling to slough off and form a ropy effect in the cloth. Be sure that the filling bobbins are firmly made, with no soft noses. Also see that the force on the pick is not excessive and that the checking of the shuttle is as gentle as possible.

Kinky filling would indicate that there is too much force on the pick or that the checking of the shuttle is improper. Of course, if the filling is hard-twisted and not properly conditioned, kinky filling is sure to result. Insufficient tension on the filling in the shuttle will, of course, also cause kinks.

I am not so sure that I know what the inquirer means by "knock-out of the filling," but I suppose that he means the premature changing of the filling bobbins. If I am right in this supposition, the cause is incorrectly adjusted feelers or shuttles rebounding in the box. With a sliding feeler, this fault is very common if the feeler or checking of the shuttle is not properly adjusted. Without knowing what type of feeler the inquirer uses, I cannot offer any advice on how to set it to prevent this fault.

8. Parts Breakage at Transfer

What causes a Draper loom with lock battery to break the transfer bunter and sometimes the shuttle and box front?

THE FAULT here is that the transferrer goes too far down into the shuttle at the replenishing of the filling. This may be a result of the latch finger being extended too far, which causes the transferrer to go so far down at the transfer of bobbins that it strikes the shuttle or the box front. If the transferrer spring is not given sufficient tension, momentum will carry the transferrer too far down into the shuttle, out of which it will not escape in time for the backward movement of the lay. This is likely to break either the transferrer, the shuttle, or the box front. The fault may also be caused by the lay going too far forward so that the transferrer strikes the back wall of the shuttle. If this is the case, set the lay back a trifle by turning the eccentric crank-arm studs in the lay sword and extend the length of the latch finger in proportion. Set the transferrer in changing position and turn the lay slowly by hand until it reaches the extreme forward position. As the transferrer starts to descend on the bobbin in the battery, watch it carefully to see that it does not strike anything but the butts of the bobbin in transferring action. With lay on front center, see that there is approximately $\frac{1}{8}$-in. play between the transferrer in its lowest position and the butt of the bobbin when the latter is fully down in the spring clip of the shuttle. This play is taken up by the momentum of the transferrer when it transfers the bobbin under full speed.

9. Loom Runs Heavy

What is the most frequent cause of a loom running heavy? The loom is running slow and unsatisfactorily.

THE TROUBLE here is either improperly lined-up boxes, dragging brake, insufficient friction if the loom has friction drive, or too slack a belt or failure of the belt to go over far enough on the fast pulley if the loom has fast-and-loose pulley drive. If too much pressure is applied to the friction clutch, the end thrust of the shaft will cause the shaft to turn heavily. Apply only enough friction to drive the loom, but first see that the loom turns over freely in its bearings and that the brake is released when the shipper handle is pulled. It may be necessary to line up the boxes before the loom will be running freely. Also see to it that the driving gears are not too tightly meshed. Crank-arm bearings may also be drawn up too tightly.

10. Picker-Stick Stroke

After setting pick on center, how long a stroke should the picker stick have?

THIS QUESTION may be answered by stating that the length of the stroke of the picker stick should be such that there will be from $\frac{3}{4}$ to 1 in. clearance between the picker stick and the leather bunter when the picker stick is in its extreme forward position. The pick should be timed so the picker stick will start to move with the crankshaft on top center or from 10 to 15 crankshaft degrees later.

Research on acetate fabrics indicates their susceptibility to

FADING BY GLARE

By Harry H. Klein
Chemist, H. Klein & Co.

◆ *The conclusions reached in the following article are the result of an investigation made by the author to determine the cause of fading of garments in the display rooms of a large retail dress establishment. They indicate that glare is a factor which must be taken into consideration in determining the fastness of dyes on cellulose acetate. As used in this article, the word "glare" is defined as light reflected from a glossy painted surface. This apparently is the first time that the fading effect of glare, as contrasted with direct sunlight, has been noted in textile literature. We shall be glad to hear from any of our readers who have had a similar experience or who have any more information on this subject.*

A LARGE retail dress establishment had its display room repainted and redecorated. The ceiling was finished with a high-gloss white paint. The woodwork, booths, and walls were finished with a high-gloss buff paint. The entire room was illuminated with 300-watt lamps inclosed in modern fixtures. A few days after the alterations were completed, a number of dresses were removed from the booths and were found to be in a faded condition. Each garment was faded in the same spot. The direct action of the paint itself, during the process of drying, was eliminated as a cause of the fading, since the condition persisted for weeks after the alterations were completed. New dresses displayed in the room faded in five days. The similarity of the faded areas in each dress led to the hypothesis that the fading was due to glare; *i.e.*, light reflected from the glossy painted surfaces.

Problem Investigated

The fading action of direct sunlight on dyed and printed fabrics is well known; but, as far as the writer knows, glare had not previously been considered a factor. It was decided, therefore, to investigate the problem more thoroughly.

Accordingly, two new dresses were hung in the booths among the other dresses. Each of these dresses was inclosed in a heavy paper bag, which was sealed tightly. A circular hole was cut in the side of the bag, exposing a square foot of dress fabric. The bottom of the bag was also cut to expose the edge of the skirt. After five days, both dresses were removed from the bags and were found to be faded in the exposed areas only.

Ten new dresses were removed to the laboratory. Here a large closet was illuminated with 300-watt lamps, the temperature of the closet being the same as that of the display room. The ceiling of the closet was painted with a high-gloss white paint. After the paint was dry, the dresses were placed in the closet. In seven days only the shoulders and sleeve edges of seven dresses were faded. The remaining three garments were not affected. One wall and the floor was then painted with a high-gloss buff paint. After exposing the ten dresses for five days, the bottoms and one side of each of the same seven dresses were faded. The remaining three were not damaged.

Samples of fabric from each of the ten dresses were subjected to chemical and microscopical examinations. These tests showed that the seven garments which faded were made from acetate-viscose fabrics. The three garments which did not fade contained no acetate. Further investigation showed that of all the dresses displayed in the store, only those which contained cellulose acetate had faded. It was noted also that all of the garments which faded were of pastel shades and that only the acetate dyes were affected, the viscose yarns remaining clear and bright. Dark-colored paints with either a gloss or a flat finish do not give a glare which will cause fading, only light-colored paints with a high-gloss finish having this effect.

Further Study Needed

This investigation has made it evident that glare is a factor which must be taken into consideration in determining the fastness of dyes on cellulose acetate. Apparently there is no parallel between fading due to direct sunlight and fading due to glare, and the usual tests which are made to determine fastness to light are not suitable for determining the fastness to glare. With the rapidly increasing use of acetate yarns in the fabrication of textiles, the subject of the effect of glare is one of economic importance, and one which merits further study. It is probable, for example, that the usual fastness tests will have to be supplemented by one for measuring fastness to glare.

Again, we do not know as yet under just what conditions of illumination and reflection and with what particular dyes fading by glare will or will not take place. In brief, there is still considerable work to be done before we can say whether dyeings on acetate yarns and fabrics are "glare-proof."

PROFIT PILFERING

In the power plant often due to ignorance of possible efficiency

By N. T. Pef
Consulting Engineer

REAL Power-Plant Efficiency = ACTUAL Efficiency ÷ POSSIBLE Efficiency

Check your plant on this basis!

THE chief reason for the prevailing low efficiency in industrial power plants is that the question of efficient operation has not received proper attention from the executives. It is generally believed that uninterrupted power production, a clean orderly plant, and a clear stack mean efficient operation. In other words, the attitude is to hire a good chief engineer and forget about the power plant. The author has shown in earlier articles that in many textile mills there is a possibility of reducing power costs by 50%. However, the widespread practice of considering costs and possible savings only in terms of percentage is an unfortunate one, and is quite often responsible for unwarranted waste. If the mill executives will think of power costs in terms of dollars and cents, they will realize better the extent of the savings which can be made by increasing the efficiency of the power plant.

The attitude of the mill management may be as follows: "Our power cost is only 5% of our total costs. Assuming that this could be reduced 10%, it would mean only ½% reduction of total costs, and ½% is not worth losing too much sleep over." But from the dollars-and-cents angle, a 10% saving on an annual power bill of $50,000 would be $5,000; obviously worth consideration, regardless of the percentage of total costs. Furthermore, while $5,000 may be a small percentage of total costs, more than likely it is a large percentage of the net profit —if not the entire profit, as has been the case with many concerns during the last few years. From still another angle, $5,000 annual saving is equivalent to $100,000 capital investment.

In considering this question of efficient, economic operation, no executive can be sure that profits are not being pilfered in the power plant unless he knows what the possible efficiency is, as well as the actual efficiency. The type of equipment and operating conditions set the maximum efficiency possible for each individual plant. Some power plants have a maximum efficiency of only 5%, whereas others can attain 50% or better. To say that a power plant is efficient simply because its power cost is lower than the average of the industry is a mistaken conclusion and not a fact.

The *real* efficiency of power plant is the ratio between the possible efficiency and the actual efficiency. For example, if the actual efficiency of one plant is 20% and of another 10%, and the possible efficiencies are unknown, it is impossible to say which is the better operated. However, if the possible efficiencies are known, and happen to be the same, it is obvious that the first is more efficiently operated. On the other hand, if the possible efficiency of the first is 25% and of the second 11%, the latter has greater real efficiency because the preventable loss is smaller. Since the real efficiency is the ratio of the actual to the possible, it can be seen that the real efficiency of the first plant is 80% and for the second 90%.

Some power plants are operated with moderate efficiency; that is, the actual efficiency is known, but not the possible efficiency. A plant is most efficiently operated when both actual and possible efficiencies are known, and an effort is made to keep the two as nearly the same as possible. Such plants are relatively rare. It can be put down as axiomatic that the power plant is uneconomic which operates with unknown actual efficiency. Such plants often show 50% waste when tested.

Calculating actual efficiency is a simple matter which practically every power-plant engineer understands. Determination of possible efficiency, however, is not so well understood, and, in some instances, even the term itself is new to engineers.

Actual efficiency, it is well known, is obtained by subtracting the sum of all actual losses (in percentage) from 100. Possible efficiency is calculated in exactly the same way, except that inherent losses are substituted for actual losses. Inherent losses are those losses which cannot possibly be reduced, and which determine the maximum or highest efficiency possible with any given equipment and operating conditions. In order to clarify the method of calculating possible efficiency, a hypothetical case follows:

A power plant generates steam at 200-lb. pressure. Boilers are not equipped with superheaters, economizers, or air preheaters. Inherent losses, including only such items as affect the calculation in a general way, are:

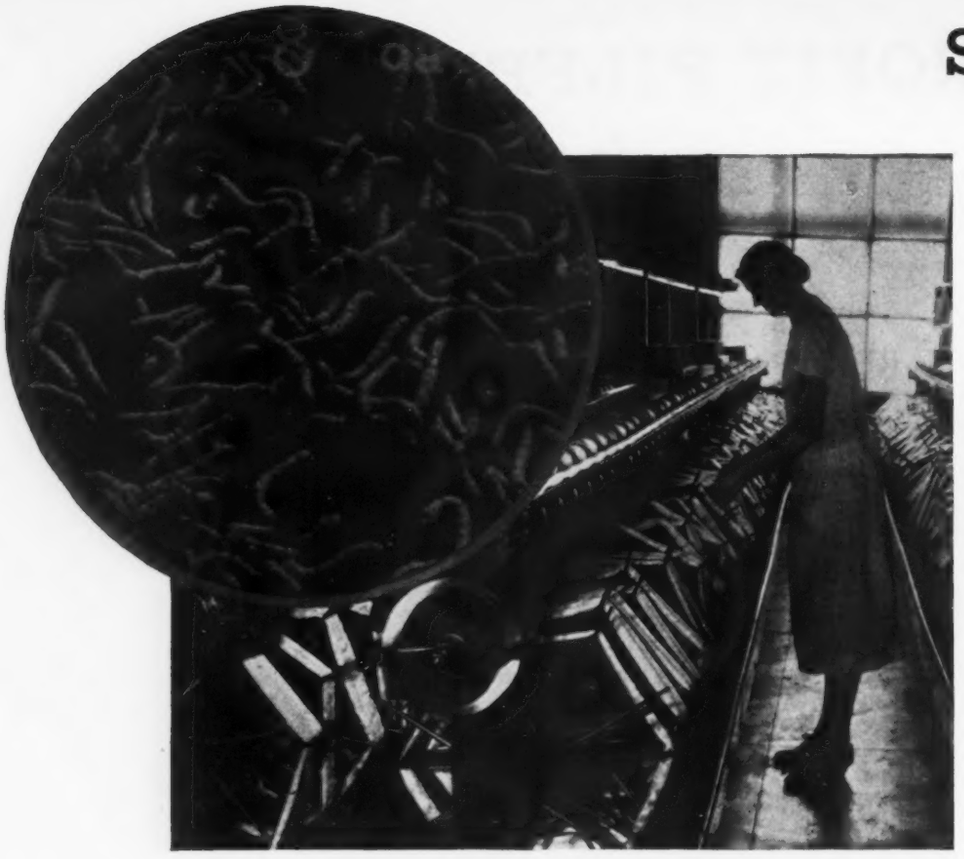
Chimney gases	10%
Combustible in ash	3
Combustion of hydrogen	5
Moisture in air and coal	1
Radiation	2
Total	21%

Subtracting the total percentage of inherent losses from 100% leaves 79%—the maximum possible efficiency of the boiler room.

In the engine room, 75% of the steam is used condensing and 25% non-condensing, all of the exhaust being utilized. The inherent losses of the condensing process total 80% and of the non-condensing process 10%. The combined inherent losses, therefore, are 80% of 75% plus 10% of 25%, or a total of 62.5%. Subtracting 62.5% from 100%, we see that the possible efficiency is 37.5%.

Operatives, knowing the possible efficiency of the power plant, should be held responsible for maintaining actual efficiency within close limits of the possible. Otherwise, it cannot be said that operation is economical.

SILK GUM



◆ *There are many different ideas as to the proper method for soaking silk for direct knitting. Some throwsters believe that a single formula comprising one good soaking oil and potassium carbonate will prove satisfactory on anything and everything in the way of silk. Others feel that it is necessary to adjust their formulas according to the gum content and nature of the silk and the number of threads and turns in the tram. In the following article a man who has had a broad experience in solving the problems of throwsters and knitters gives his personal views on this moot question.*

THERE are no less than eight factors which have an important bearing on the results obtained in knitting hosiery by the 3-carrier system. Some of these factors have a greater influence on the knitting results than others. Frequently a variation or modification in one of the factors will act as a corrective factor in event something is out of balance in one of the other factors. Conversely there are times when anything that is done to tend to correct a major defect tends to magnify that defect.

All of these eight factors fall under two main headings, namely, (1) variation in the silk itself, and (2) variation in the method of handling the silk. The latter can be subdivided into two groups—the first group being the variation in handling the silk in the throwing plant; the second group being variation in handling the silk in the knitting room.

Proper throwing of silk for full-fashioned hosiery is just as important as proper knitting. On the other hand, if the throwing has been carefully done and a properly thrown cone is attached to the knitting machine, poor knitting will result, if the knitting machine has not been adjusted to knit the nature and texture of the silk on the cone.

Two terms have crept into the hosiery industry of late which have caused no end of trouble to the throwster, the knitter, and the purchaser of hosiery. These terms are "direct knitting" and "ringless" hosiery. Many knitters and throwsters have the idea that the term "direct knitting," in its literal sense, gives the thought that it is possible to take each and every lot of silk, soak it with the magic soaking oil, deliver a case of cones to a knitter, have the knitter open up the case and tie the cone onto the end of the machine, throw the switch, and go around the other side of the machine where perfect stockings are being taken off. Likewise, there are many who feel that the term "ringless" indicates that practically any grade of evenness of this properly thrown silk will knit a stocking of exactly the same density or transparency from the toe to the welt. It is rather generally accepted that good results cannot be obtained by direct-knitting methods on the 3-carrier system unless the silk runs at least 81% evenness when thrown into 3- or 4-thread tram, and 78% evenness when thrown into 7-thread or heavier tram.

Let us consider for a moment some of the variables in the silk itself which require careful and clever adjusting if the thrown yarn is to have identical knitting qualities.

Raw-Silk Tests

Most purchasers of raw silk for hosiery subject the silk to seriplane tests to determine variations in evenness, cleanliness, etc. Others go further and make more exhaustive tests, such as a cohesion test, a boil-off test, and an incline-plane serograph test to determine the nature of the fiber itself irrespective of the gum content.

Thus, we find some concerns sorting out the silk according to the amount and nature of the gum content. These firms find that they can grade the silk into at least two major groups, regardless of its evenness or cleanliness. These are:

1. Hard-gum silks which have a wax-like gum coating offering considerable resistance to wetting-out or which naturally have a high cohesion.

2. Soft-gum silks which wet out easily and lack this high degree of cohesion.

Another factor which must be considered by throwsters of raw silk for hosiery tram is that of the gum content of the silk. In our investigation and study of silk soaking and throwing, we find that there have been several lots of raw Japan silk of exceptional evenness and cleanliness which have a gum content fully as high as the accepted standard gum content of China silk. A recent 10-bale shipment, which was sampled by a prominent hosiery

AND FIBER

Must be considered in soaking skeins for 3-carrier system of direct knitting

By George A. Thomas

manufacturer and checked in several laboratories had a gum content of 24%. This certainly offers a problem in conditioning for knitting purposes which is different from that encountered with silk having a normal gum content of 17 to 18%. Again, there is a still different problem in conditioning silk with a gum content as low as 13 to 14%—and several lots of this type have been found recently.

Aside from the gum content, the throwster must also deal with the nature of the silk fiber itself. Most lots of silk fall into one of four distinct groups. These are:

1. Very hard silk fibers.
2. Hard silk fibers.
3. Soft silk fibers.
4. Very soft silk fibers.

Naturally there must be some compensation in the conditioning if the throwster is to turn out all four natures of fiber with exactly the same knitting quality.

Averaging Lots

Because of the variation in the silk itself, it seems logical that there can be no one universal silk soaking formula unless the lots of silk are so averaged that uniformity as a whole can be obtained. This averaging necessitates careful physical and chemical analysis of the raw silk and segregation and blending of lots as they go through the mill. Some throwsters feel that a good average can be obtained by making up a soaking lot containing books from 10 different bales. Others feel that they must draw their lots from at least 20 or 30 bales. If the latter method is followed, the throwster must have sufficiently large storage space and production if he is to keep his capital investment in raw silk in balance with the capital invested in other departments. Smaller throwsters, who are not able to average their lots in the manner outlined above, must have some other method of compensating for the variables in the raw silk. Otherwise such throwsters will be unable to turn out a uniformly thrown tram.

The gum of hard-gum silk is more difficult to soften and keep soft than is the gum of a soft-gum silk. For this reason, hard-gum silks are usually soaked longer or at higher temperatures than soft-gum silks. Hard-gum silks can be safely soaked at temperatures of 95 to 100° F. and for as long as 14 to 15 hr., and still not be conditioned to any greater degree than a soft-gum silk which has been soaked at a temperature of 75 to 80° F. for 9 hr. These times and temperatures naturally refer to soaking in a still bath or in a circulating tub where the circulation is accomplished without pressure.

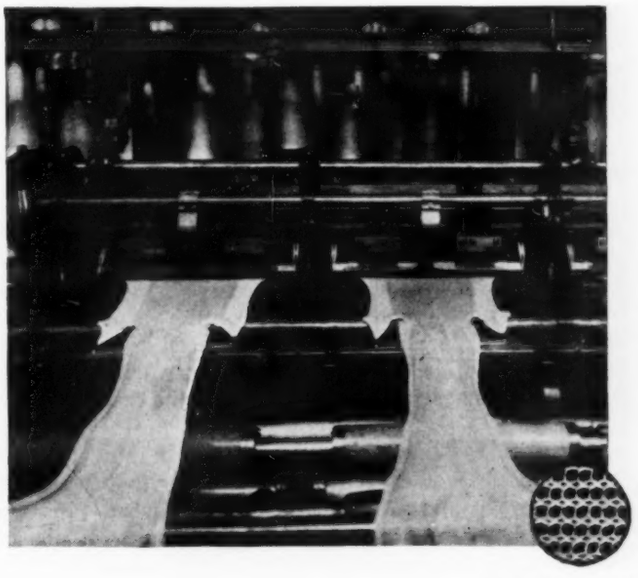
Perhaps the most satisfactory ingredient to use in the soaking bath to control the nature of the silk fiber is potassium carbonate. Some very hard silk fibers will require as much as 3 lb. of potassium carbonate to 100 lb. of silk and still do not produce as soft a silk as will a very soft fiber silk which has been soaked with only 1 lb. of potassium carbonate. Some throwsters set up a basic formula based on very hard silk, using 3 lb. of potassium carbonate to 100 lb. of silk. On lots designated as hard-silk fiber, they will reduce the amount of potassium carbonate to 2¾ lb.; for soft-silk fiber, to 2½ lb.; and for very soft, to 1½ lb.

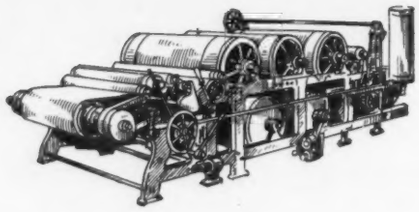
Glycerin is widely used in the soaking formula to compensate for irregularities and deficiencies in humidity of the knitting room. It is seldom required where the relative humidity of the knitting room is constantly 70% or above. In fact, it becomes a detriment where the humidity is high, as it is inclined to make the silk stick to the needles. Where the relative humidity of the knitting room is below 40%, glycerin or another hygroscopic agent is essential to keep the silk soft and plastic and to permit knitting of a flat leg fairly free from any tendency to curl on the selvage.

Many throwsters use the same amount of soaking oil for a given type of thread, regardless of differences in the gum content and the nature of the raw silk. Others use less soaking oil for a low-gum-content silk than for a high-gum-content silk. Still others want to make a thrown silk of approximately the same boil-off, regardless of the raw gum content of the silk; therefore they build up the soaking bath of a low-gum-content silk by adding oil (and occasionally glue or gelatin). This practice is probably more prevalent among commission throwsters than it is among manufacturers who throw their own silk.

Again, as the number of turns and the number of threads in the tram are increased, most throwsters make a corresponding increase in the amount of soaking oil to provide the added lubrication needed. Thus, in the same plant the amount of soaking oil may range from 13 to 35 lb. to 100 lb. of silk.

Some throwsters are of the opinion that a good soaking oil and potassium carbonate mixed according to a single pet formula, are satisfactory for soaking all types of silk. However, due to variable factors which we have considered, plus the other variables in the knitting process, the author firmly believes that many different formulas are necessary to make silk suitable for direct knitting by the 3-carrier system.





WARPING AND SIZING . . .

Speeds, tensions, and temperatures recommended for acetate yarns

By Warren F. Cooper and Carl C. Mattmann, Jr.

A. M. Tenney Associates, Inc.

ACETATE yarns require somewhat of a special treatment in warp preparation if section marks, warp streaks, and other defects are to be avoided in the finished fabric. As the authors are closer to the acetate field than to any other, they will offer some recommendations for the warping and sizing of this type of yarn.

In the horizontal warping operation it has been found that maintaining a relative humidity of 65% gives the best results on acetate. In warping, static electricity is a particularly troublesome factor; and, unless it is controlled either by humidification or static eliminators, ends will fly, thus making it impossible to match sections. The result will be section marks and lapped and loose ends.

When warping from spools on the silk system, it is necessary to use a felt washer in conjunction with the porcelain button on the spindles. The felt washer acts as a brake and prevents the spools from running ahead. Another good practice is to oil the spindles lightly with a stainless oil. This will eliminate vibration and allow the spools to revolve more freely, resulting in a more uniform tension. The oil is usually applied by a brush when the warper is in motion.

Warping From Spools

Care should be exercised when warping from spools to see that the tension of the warper is kept at a minimum; otherwise warp streaks will be the result. A safe speed at which to operate is 80 to 100 yd. per min. Another important factor in the making of warps from spools, particularly when mixing yarn from one case with that of another or using redrawn spools, is to spot the spools horizontally on the creel. This is an old practice and a good one in minimizing warp streaks.

The latest development in warping is the new high-speed warper with cone-creel equipment. This method of warping is more economical than the spool method, as it permits higher speed with a more uniform tension control—consequently with less strain on the yarn. In many instances this machine operates at a speed as high as 320 yd. per min. The speed, of course, is varied with the size of yarn that is to be run, as well as the density of the warp.

When sizing acetate, one should bear in mind that the stretch should not exceed 4%. In order to get a good weaving warp and a soft hand in the finished fabric, a stretch of not more than 2% is most advantageous. Slashers have recently been so designed that the control of the stretch can be carefully regulated and maintained throughout the sizing of the warp.

All slashers should be equipped with automatic temperature controls, as oftentimes the operator neglects to watch the thermometers on the cylinders, with the result that the cylinders become too hot, injuring the yarn to such an extent that it becomes brittle. Brittle yarn not only causes trouble in the loom, but will make the finished cloth harsh and streaky.

In the sizing of acetate yarn, the best practice is to cover the first cylinder of the slasher with muslin or a light canvas cloth. Acetate yarn which comes in contact with a hot metal surface is likely to become brittle. In order to get an even distribution of size on the yarn, it is best to cover the middle quetsch roller of the slasher. This covered roller acts as a pad and the covering also saves wear on the rubber. An excellent type of covering is a felt sleeve. For sizing acetate, the temperature of the sizing solution is usually maintained at 140° to 150° F.

Drying Sized Warps

Too much attention cannot be given to the drying of acetate yarn, because this is a very important factor in the weaving, dyeing, and finishing of the cloth. Cylinder temperatures should be maintained as follows: On a three-cylinder rayon-type slasher operating at a speed of 10 to 12 yd. per min., the temperatures should be 180° F. on the first two cylinders and 120° F. on the third. On the five-cylinder slasher, the temperatures should be 170° F. on the first two cylinders, 180° F. on the third, 140° F. on the fourth. The fifth cylinder should run cold. These temperatures are based on an operating speed of 18 to 20 yds., per min.

It is essential at all times to check the elongation of the sized warp ends. This can be done very simply by breaking out an end near the selvage side of the warp, while it is running. Take this end and hold it firmly between the fingers, measure off 10 in. on a ruler, and stretch the yarn until it breaks. Acetate yarn should stretch to 12 in. before breaking. This means there would be 20% elongation in the yarn after slashing, which is most desirable for a soft and pliable weaving yarn and should by all means be attained.

Abstract of a paper presented at the 35th annual meeting of the Alumni Association of the Philadelphia Textile School, held June 12, in Philadelphia. Printed by permission of the association.

MONEY-SAVING HINTS ON PROCESSING KNIT GOODS

Dye Tubs

OF THE TWO standard becks for processing knit goods—the deep and the shallow types, the deep type is satisfactory for handling some fabrics. However, acetate materials and some styles of rayon are processed better on the shallow machine. Use of a "back-board" is advisable to keep the pile of goods from falling toward the front and tangling. The oval reel is now generally preferred on both types of becks.

For most purposes, and especially for dyeing acetates, equipment should be lined with stainless steel or Monel metal. A serious drawback to wooden becks is that they absorb the dye. Lined becks save time in cleaning and there is no cost for chemicals for cleaning.

Fog

FOG IS BAD in any dyehouse. Condensate dripping on fabrics lying around on trucks awaiting processing is harmful; this is particularly true of acetates, as water marks on the gray goods often cannot be removed in scouring or subsequent operations. An adequate ventilating system to eliminate fog is well worth while. Fans selected for this system should have the best possible efficiency rating.

Matching Shades

THERE IS frequently a controversy between the dyehouse and the cutting room as to whether a shade is a good match or just something between a white and a black. Cooperation between these departments is necessary if mill operating costs are to be kept low. While the dyer should try to get as good a match as possible, it is sometimes better to use a lot which is a little off-shade than to reprocess it, with possible loss of hand and danger of causing runners or other damage due to excessive processing.

In matching shades, it is poor practice to look too long at the samples, as this fatigues the eyes and finally confuses them to a degree which makes impossible the differentiation between shades.

There is probably more chance of off-shades in whites than in colors. After bleaching, acetate fabrics are often given a touch of reddish blue dye in a lukewarm solution to produce a blue white. Bluing for cotton and rayon is usually applied cold. However, it is best to keep away from bluing on any fabric, whenever possible, as absence of bluing lessens the likelihood of shade differences between batches.

Water Supply

FUEL CONSUMPTION can be greatly reduced by having a supply of hot water on hand. This also saves time in the dyehouse and results in increased production. I prefer a copper tank for hot-water storage. The cost is higher than that for iron or wood, but the results obtained justify the extra initial expense.

Clean, soft water is a great boon to any mill; but, if a dyer has to use hard water, he will find that addition of sodium metaphosphate to the various baths will prevent a lot of the difficulties which are due to breaking down of solutions by calcium compounds in the water.

Finishing

THE MODERN method of extracting, processing, drying, and finishing in one continuous operation is advantageous where large production and high quality must be obtained. This facilitates the application of softeners and sizings, permits one to get a reasonable regain and any required degree of dullness, and insures uniformity throughout the piece.

Cooperation between the dyeing and finishing departments is important. Certain finishing compounds, for example, affect the shade of dyed goods; if these are applied in the finishing room, they will throw the lot off-shade. By working together, the dyer and finisher can adjust their formulas to prevent this and thus save a lot of bickering as to who is to blame for bad matches.

One important part of the finishing department's job is to finish the different styles of fabrics in such a way that the widths will lay out properly on the cutting tables. Fabrics should not be cut immediately, after finishing, but should remain on rolls for 24 hours, say, to allow it to set at the correct width. Overstretching must be avoided in the finishing department, as a soft hand cannot be obtained on a fabric which has been overstretched.

A Page from a Dyer's Notebook

By E. S. Dunlap
Belle Knitting Corporation

Striped double plain constructions which insure short floats and

MORE EVEN CLOTH

By R. A. C. Scott

◆ *In this article Mr. Scott describes a method of producing two-color stripe patterns in double plain cloths which has several advantages over the method he described in the January issue. Also he discusses the production in such cloths of interesting three-color and four-color hairline patterns.*

IN DOUBLE plain cloths employing a changing order of coloring in the warp, the ends are arranged one and one throughout as to their positions on the face and back, with the picks usually one and one as to color, but at each change of the pattern the order of coloring is modified. In the two opposite double-plain weaves given at Figs. 98 and 99, the ends are arranged one face, one back, and the picks one dark, one light. With the ends also arranged one dark, one light, the weave at Fig. 98 produces a dark over a light surface, as shown at Fig. 88*b* [TEXTILE WORLD, January, page 79]. The ends of weave 99 are arranged one light, one dark, which, due to the odd (light) ends interweaving with the even (light) picks, on the face, produces a light over a dark surface, as shown at 87*a* [January].

Although the plans illustrated at 100 and 101 show the twill lines formed by the weave marks running in the opposite direction, yet they produce identical color effects. Therefore the weave 98 or 100 may be combined with either the weave 99 or 101, so that more latitude in joining the weaves is found in this than in the first system. The design given at Fig. 102, which is a combination of Figs. 98 and 101, will give a two-dark-and-two-light stripe effect, the flat view of which is illustrated at 102*a*. It will be noted that both the weaves given at 89 [January] and 102, respectively, although of different construction, produce the same color effect. Moreover, the order of filling in both cases is one and one and the positions of the backing picks are the same. The difference therefore lies in, first, the order of color arrangement of the ends and, second, in the weaves employed, which of course are altered to conform to the arrangement of the ends. This system of constructing stripe patterns has several advantages over the first method discussed, as follows:

1. A more even cloth results, due to the elimination of the two face or two backing ends coming together.
2. Providing each face pick interweaves only with its own color of warp, it is impossible to have a larger float than three where the weaves join.
3. If desired, the weaves can be arranged to cut where the interchange takes place.

Three-Color Effects

As there are only four picks in the repeat of the double plain weave, the maximum number of colors which can be introduced is four, if each line on the surface is required to be solid in color.

Examples of three-color patterns arranged one face, one back in the warp are given at Figs. 103 and 104. It will be noted that the same arrangement of the face-warp colors is used, but that in Fig. 103 the filling arrangement is in the following order: white, medium, white, dark—whereas in Fig. 104 the order is white, white, medium, dark. Moreover, the design at Fig. 103 differs in construction from that shown at Fig. 104, inasmuch as the former weave does not cut, while in the latter two cuts are made. In this way two different methods of arranging the filling colors to give a vertical hairline in three colors are illustrated.

In the designs given the marks represent warp, and the differently colored threads are represented by shaded squares for white, two short diagonal marks for medium, and circles for dark. The single diagonal marks represent the backing weave, and the dots show where the backing ends are raised on the face picks.

The corresponding flat views are given at Figs. 103*a* and 104*a*, respectively, where the threads are designated by numbers, 1 representing white, 2 medium, and 3 dark. They are shaded accordingly.

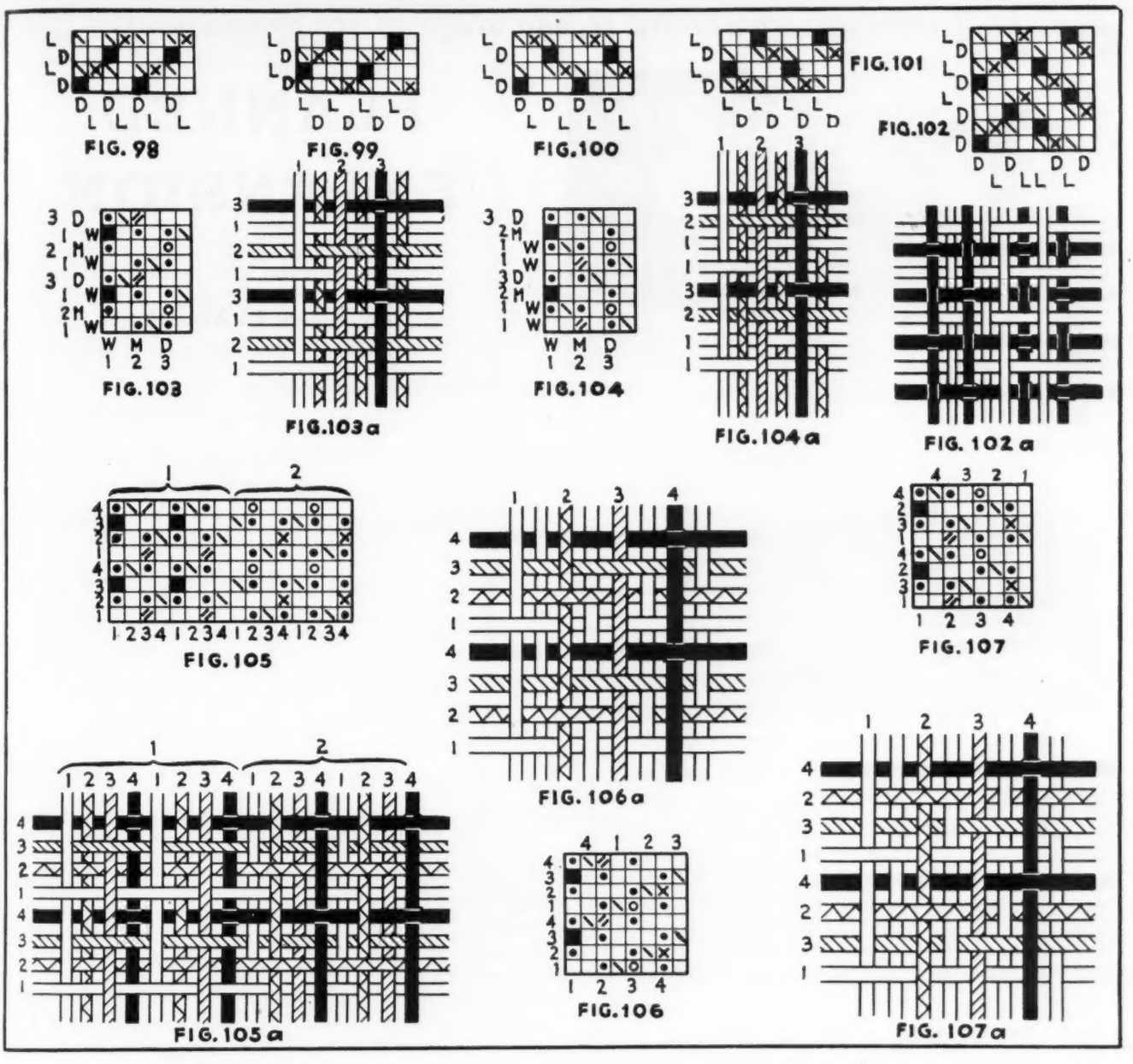
The backing ends are indicated by zigzag markings. If, however, solid lines of color are required on the underside, it is necessary for each backing end to be the same color as the pick covering it. For example, in Fig. 103 the first backing end is raised on the dark picks and the second and third on the white picks. Therefore, the color pattern on back will be three, one, one, or dark, white, white. The arrangement of the backing ends as to color to produce solid lines on the underside is indicated above each plan.

By a careful examination and comparison of the designs with their corresponding flat views, the reader will have little or no difficulty in understanding the method of construction employed and be able to combine other and more irregular color patterns of his own creation by adhering to the principles of formation explained.

Four-Color Effects

The designs shown at Figs. 105, 106, and 107 and the corresponding flat views at Figs. 105*a*, 106*a*, and 107*a* will amply illustrate the method of producing patterns in four colors. The colors in design 105 are arranged in the order of one, two, three, and four in both warp and filling; but by interchanging the weaves where the two face or two backing threads are brought together, we are able to obtain four distinct vertical hairline stripes. For example, in section 1, the odd ends and picks in shades 1 and 3 are brought to the surface; and similarly the even ends and picks in shades 2 and 4 in section 2 are brought to the surface. The complete pattern produced on the surface by the design 105 is a single hairline stripe in the following order of colors: 1, 3, 1, 3, 2, 4, 2, 4. This will be better understood by comparing the weave with the corresponding flat view as given at Fig. 105*a*.

The weaves shown at Figs. 106 and 107 demonstrate another method of obtaining hairline stripes in four different colors. In this case the warp is arranged one face,



one back, with different weave combinations and color orders. The marks in Figs. 106 and 107 represent warp, with the shaded squares indicating white, the double diagonal marks the second color, the circles the third color, the crosses the fourth color, the single diagonal marks the backing weave, and the dots the backing ends up on the face picks. It will be noted that in 106 the filling colors are in the same order as the face-warp colors, whereas in 107 the second pick is in the same color as the third face end, and the third pick as the second face end.

Correcting a Defect

As it is necessary that each filling color cover its own color of warp to produce a vertical hairline stripe, the arrangement of the weave shown at 106 is defective, due to the distinct twill formation of the intersecting face ends. A glance at the weave 106 and the corresponding flat view at 106*a* clearly shows the twill formation of the three-and-one warp flush on the face. This defect, however, is not present in the weave and color combinations as illustrated at Fig. 107 and the corresponding flat view at Fig. 107*a*. The weaves in this case are purely double plain, arranged to cut every four ends; but with the modified order of color arrangement in filling, already referred to, the same colored-stripe effect is obtained on the surface as by using the defective construction indicated at 106.

As before, should hairline effects be desired on the underside, the backing threads will require to be the same color as the picks over which they are raised. The backing colors are indicated by numbers above designs 106 and 107. The complete warping color arrangement for Fig. 107 will be 1, 4, 2, 3, 3, 2, 4, 1.

Although the pattern effects are limited to single lines of each color, in the four-color hairline effects considerable variety of pattern can be obtained by suitable arrangement of the face-warp colors in conjunction with the correct weave combinations.

Previous articles by Mr. Scott on backed and double cloths appeared June, August, and September, 1932; February, May, and October, 1933; February, 1934; January and October, 1935; and January, 1936.

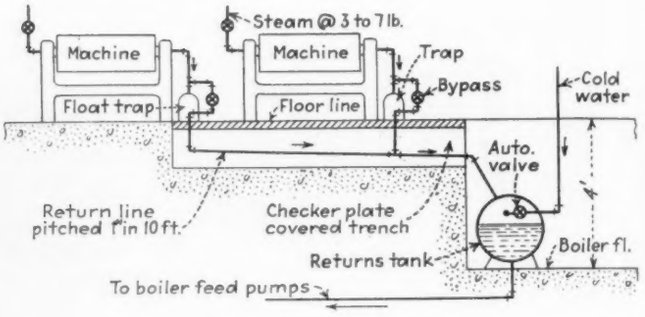
Finishing company completes second stage of its program of

PLANNED EXPANSION

By Bruce E. Maxon
Consulting Engineer, Cincinnati, Ohio

Fig. 1. Original buildings—1933

Fig. 2. First and second additions—1934-5



Plan III. Condensate return system

◆ *In the middle of the depression, when others thought it was crazy to build, Reliance Dyeing & Finishing Corp., started to revamp and enlarge its plant in preparation for the larger production expected when general business conditions improved. The first step—the razing of four old buildings and the erection of a new office and sample room—was outlined in our March issue. Following is a description of the next step taken by the company.*

EARLY in 1935, the Reliance Dyeing & Finishing Corp., Covington, Ky., determined to undertake the second step in its expansion program. The limiting factor in the total plant productive capacity was the amount of storage space, rather than the machinery. Although the old buildings, which were razed during the first step of expansion, had been a liability, they also had been somewhat useful for storage purposes. The main building permitted the storage of only a limited amount of goods, and it was determined to add as much storage space as could be properly financed. Additional first-floor area would also have the advantage of reducing the amount of material-handling and resulting indirect labor cost.

However, undesirable boiler conditions, which were described in the earlier article, were serious enough to interrupt production and result in high costs. Therefore, the records of cost for several years were studied. A conservative estimate of the savings which would be effected by a new boiler and return system showed that a new boiler installation was imperative. In a plant engaged in the dyeing and finishing of cotton piece goods, the boiler is the heart of the plant—and steady reliable performance is essential. In addition, the estimate showed that a new installation would pay for itself in a comparatively short period of time. Additional storage space, while not forgotten, became secondary to a new boiler installation.

It was realized that only the completion of the entire project would fully satisfy all requirements. However, the first step had been completed in 1934, and the second step was in order. At the very least, it would represent definite progress toward a predetermined goal. Consequently, the firm of civil and mechanical engineers retained by the company was instructed to prepare detailed plans and specifications for the new boiler and equipment and the building addition. All construction was to fit into the final plan.

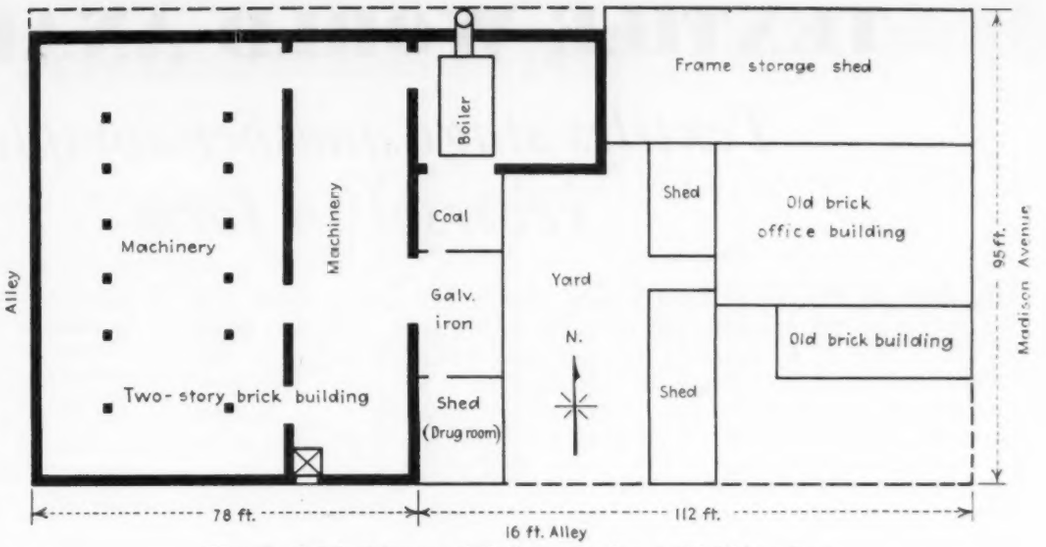
New Boiler

A careful engineering estimate disclosed the size of boiler required for the ultimate production which could be handled on the available ground space. The semi-portable, fire-tube type was specified, as the size and service did not justify a water-tube boiler. After bids had been received, a boiler was selected as being the best equipment for the particular conditions involved and a high setting suitable for efficient combustion and stoker firing was designed. Furthermore, it was thought that some of the fireman's time could be utilized for maintenance work in the plant if a stoker were installed, and that stoker firing would give more efficient combustion than hand firing as previously used. Bids were received on several high-quality stokers, and the single-retort, underfeed type was purchased.

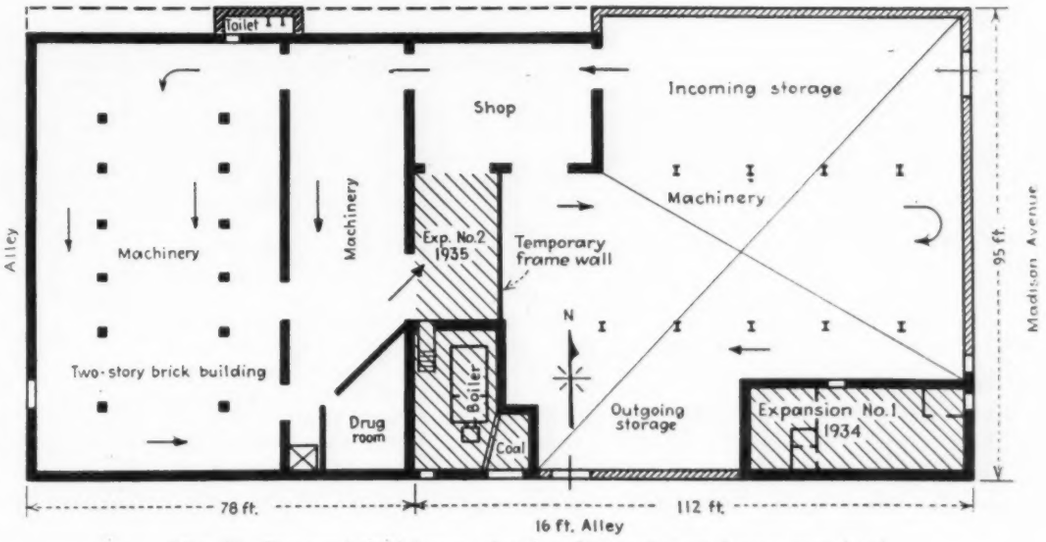
For economy and good feed-water conditions, all condensate from machines should be returned to the boiler hot. A schematic diagram of the return system designed for this plant is shown in Plan III. Since steam enters the various machines at a low pressure, there is naturally very little pressure remaining to return condensate to the boiler

room. However, both the heat and the distilled water are so essential that every provision was made for return. The boiler room was depressed 4 ft. below the mill floor level. Return lines were pitched toward a returns tank in the boiler room, and run in trenches provided in the mill floor. At each dryer, a new float-type trap with thermostatic air bypass was installed. A hand-operated bypass was placed around each trap to serve for quick drainage while starting a cold machine. Under these conditions, condensate flows freely by gravity from machines through the traps and return line to the boiler room.

A float-valve for cold-water make-up was incorporated in the returns tank, and an oil filter was installed in the boiler-feed line. An oil separator was placed in the exhaust pipe from the pumps, and provision was made to use the pump exhaust in the machines when possible. The usual accessories, such as blow-off tank, soot blower, and automatic stoker control, were also installed. Boiler, tank, and steam and return lines were fully insulated. The insurance rates justified a non-combustible boiler room with an insulated steel roof deck and metal doors.



Plan I. Original layout of Reliance Dyeing & Finishing Corp.



Plan II. Proposed final layout showing first and second steps completed.

The wrecking of the old boiler and installation of new flooring provided additional storage space. The new storage portion of the building has a steel-supported roof and skylight, and conforms to future construction. The only temporary expense involved was for a removable frame wall in part of the east side of the plant. The original layout of the mill is shown in Plan I and the final layout with the first and second stages completed is shown in Plan II.

Results and Conclusions

Now that the company has completed approximately $16,000 worth of construction in a $30,000 program, it finds itself in an improved situation. The new storage space available relieves congestion in the plant. The new return system is far superior to the old in that the machines drain to best advantage. Goods which formerly required two passes can now be dried in one pass. There are no delays due to water-logged machines. Although the new boiler has been in operation only a short time, the amount of coal used has been greatly reduced. The advantages of increased production now possible cannot be accurately evaluated.

It is certain, however, that the management can take on extra business, the thought of which could not formerly be entertained. The probabilities of interruption, and, in some measure, the inconveniences of overcrowding are eliminated. Increased volume can be looked to with confidence.

The moral of this story is obvious. The plant is one of moderate size, and the company might have gone ahead by cut-and-try, hit-or-miss methods. Indeed, if the management had followed the example everybody was setting in 1934, it would have done absolutely nothing. Instead, it secured intelligent assistance and prepared a logical program of expansion which showed the company where it was headed, and permitted sound investment of every dollar, step-by-step. After the preliminary arrangements were completed, the management acted on the plan—regardless of the opinions of others at the time. The ultimate result will be a fine, profitable plant, giving excellent service to its customers and a source of pride to its owners.

TEXTILE WORLD ANALYST

Textiles stage another complete reversal in form

Mill Activity 10% Over Last Year: Textile mill activity in the first five months of 1936 ran approximately 9% over that of 1935, and about 6% above that of an assumed "normal" year (1924-31 average). Although complete June statistics are not available, it is evident from general trends that at least this rate of increase was maintained for the first half-year. This is particularly interesting in that 1936 is supposed to be the off-year in the two-year textile cycle. However, it must also be remembered that the first part of 1935, in textiles, was bad while the last five months saw unusual activity; consequently a high rate will be necessary during the rest of this year to maintain the increase noted above. . . . By fibers, cotton has shown a 13% increase in consumption over 1935; rayon an 18% increase; silk an 18% decrease; and wool a 5½% decrease.

THE textile industry once more has run true to form by staging a complete reversal in form. Just as last August the picture changed almost over-night from gloom to boom, so within the last several weeks has optimism replaced pessimism.

The change has been particularly significant in the cotton division. After months of slack demand, accompanied by high rate of production, buying suddenly stepped up to enormous quantities, far exceeding current output. The result is an excellent statistical position.

Even the good old English word "shortage" rears its lovely head. Everybody knows the staple cotton shortage, of course, but now a scarcity of viscose rayon yarn from possibly August to October is hinted in some quarters. Whether it materializes or not, even the suggestion is an indication of the changed psychology in the market.

Obviously, seasonal quiet is expected for a while, but the best bet now is that August and September will see a good push ahead. Best of all is the improved chance of a profit in certain branches of the industry where such a chance was non-existent not so long ago.

Brief high-lights of the various markets are given below:

Cotton: Unusually high rate of sales, advance in prices and increased profit margins featured the cotton division of the industry last month. The trade, fearing actual shortage and higher prices, bought well ahead. This was the first real market the industry had seen in a long time, particularly at this season of the year. In print cloths, the manufacturing margin increased by more than 1c. a pound the last of June as compared with the last of May. The sharp decline in manufacturing margin in carded yarns which occurred in May was reversed in June. (See Tables I and II.)

Wool: Prices paid in the West for new wools indicate dealers' confidence in the future. In the cloth market, preliminary work in men's wear for spring 1937 is under way. Effect of bonus spending, while evident in the retail clothing market during the week immediately following payment, has not been large enough to change the general situation.

Rayon: The position of rayon yarns continues to be extremely strong, with possibility of shortage later in summer predicted in some quarters. Deliveries of rayon broad goods in May were slightly above the previous months and 45% above the same month last year; however price tone has been rather uncertain, and weavers were not too confident about being able to pass on the advance of 1 to 3c. in the fine deniers in viscose yarns, made effective last month.

Silk: Raw silk entered July rather breathless after a fluctuating advance which totaled about 30c. between the second and fourth weeks of June. The rise was due partly to a shortage of spot silk in New York and partly to speculative influence.

Knit Goods: Hosiery, underwear and outerwear all showed signs of vigor during the last month. Hosiery was helped by a greater retail demand and by the raw silk rise. Underwear manufacturers were adopting a firmer tone on prices and some advances were reported. The outerwear situation was especially good in swimsuits.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933...	21.4	August, 1935...	17.1
October, 1933...	19.1	September, 1935	17.9
January, 1934...	18.4	October, 1935.	17.7
April, 1934.....	17.6	November, 1935	16.4
July, 1934.....	15.5	December, 1935	16.2
August, 1934....	16.6	January, 1936...	17.2
September, 1934.	18.6	February, 1936..	16.5
October, 1934...	17.4	March, 1936....	15.5
November, 1934.	15.8	April, 1936.....	14.3
December, 1934.	16.2	May, 1936.....	14.3
January, 1935...	16.2	June, 1936.....	15.3
February, 1935..	16.0	June 3.....	14.9
March, 1935....	15.9	June 10.....	15.3
April, 1935.....	16.1	June 17.....	15.5
May, 1935.....	16.0	June 24.....	15.4
June, 1935.....	16.5	June 30.....	15.5
July, 1935.....	15.2		

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933.....	23.5	August, 1935....	15.3
October, 1933...	20.0	September, 1935	15.4
January, 1934...	18.3	October, 1935 ..	15.8
April, 1934.....	15.9	November, 1935	16.3
July, 1934.....	14.7	December, 1935	16.3
August, 1934....	15.3	January, 1936...	18.4
September, 1934.	15.6	February, 1936..	17.5
October, 1934...	14.6	March, 1936....	16.3
November, 1934.	13.5	April, 1936.....	15.6
December, 1934.	13.5	May, 1936.....	14.8
January, 1935...	13.5	June, 1936.....	14.6
February, 1935..	13.9	June 3.....	13.8
March, 1935....	14.4	June 10.....	14.8
April, 1935.....	14.1	June 17.....	14.6
May, 1935.....	13.8	June 24.....	14.9
June, 1935.....	14.5	June 30.....	15.0
July, 1935.....	14.3		

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Those who wish to continue with indices based on July 1, 1914, for chart purposes or otherwise, can secure conversion factors to change the new figures to the old by writing TEXTILE WORLD, Statistical Dept., 1427 Statler Bldg., Boston, Mass. Figures on cotton manufactures, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
1923-25 average	100	100	100	100	100	100	100	100	100
1930 average...	50	61	61	72	58	61	72	90	109
1931 average...	32	58	46	59	46	49	59	71	32
1932 average...	24	37	37	60	36	40	52	57	21
1933 average...	39	56	55	50	53	59	62	80	21
1934 average...	61	67	70	62	63	70	75	91	17
1935 average...	60	68	67	69	56	58	70	88	22
July 1935.....	61	68	65	69	56	59	70	89	20
Aug. 1935.....	58	68	66	69	56	59	70	89	23
Sept. 1935.....	55	66	68	69	58	60	70	89	25
Oct. 1935.....	57	68	68	69	60	61	73	92	27
Nov. 1935.....	60	70	69	72	62	65	75	92	27
Dec. 1935.....	60	71	69	72	64	66	76	92	26
Jan. 1936.....	48	67	63	68	67	73	75	93	26
Feb. 1936.....	42	62	58	67	72	81	77	93	24
Mar. 1936.....	42	61	57	66	73	81	77	93	23
Apr. 1936.....	43	60	55	64	68	75	76	90	22
May 1936.....	43	57	54	64	67	75	76	90	21
June 1936.....	44	58	57	65	67	75	76	90	20

DUCKS AND SHEETINGS

By John Hoye

Constructions, finishes, and uses of two important classes of STAPLE COTTON FABRICS

BREATHES there a textile man who, on more than one occasion, has not been embarrassed by lack of knowledge concerning some of the staple cloths? Until now there has been no convenient place for a man to turn in order to learn about or refresh his memory on the constructions, finishes, and uses of such cloths. Hence, Mr. Hoye's series of articles entitled "Staple Cotton Fabrics," of which this is the seventh and by no means the last, is of great educational and reference value. It is a vital contribution to textile literature.

Duck

Duck or *canvas* is the heaviest single woven fabric made. There are many types made for different purposes. The main types are *number ducks* and *ounce ducks*.

Number ducks are divided into *sail ducks* and *wide (number) ducks*. These are the heaviest and strongest ducks. Carded ply yarns, without sizing, are always used. Number ducks are made in medium and hard textures, the hard-texture ducks having more twist in the yarns. In order to obtain the maximum strength and weight, ply yarns (of varying numbers of single yarns) are used.

a. Sail ducks are number ducks made in 22 and 24 in. Narrower number ducks than these are referred to as *extra narrow ducks* and *narrow ducks*. These run from 6 in. up to 20 in.

b. Wide number ducks are made in widths from 26 in. up to 144 in., some of these being standard and others made on contract only. The standard weights of all number ducks are based on No. 3 sail duck, which in 22 in. weighs 16 oz. to the running yard. Duck weighing one ounce lighter (15 oz.) for 22 in. width is referred to as No. 4. For each ounce less in weight, 1 is added to the number; for instance, No. 5 duck indicates a weight of 1 oz. for 22 in. width. These numbers run up to No. 12, which weighs 7 oz. for 22 in. width. All other widths of number duck, whether standard or made on contract, are made pro rata to their particular weight in 22 in. sail duck. For instance, No. 6 duck, which weighs 13 oz. for 22-in. wide, would weigh 26 oz. in the 44-in. standard No. 6 wide duck. For ducks heavier than No. 3, the number is one less, No. 2 being 17 oz. for 22 in. and No. 1 being 18 oz. for 22 in.

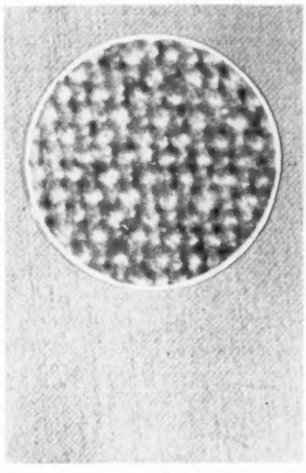
Ducks heavier than No. 1 are called *naught ducks*. For example, 1/0 duck weighs 19 oz. for 22 in., 2/0 weighs 20 oz. for 22 in. Sail ducks and extra narrow and narrow ducks are made as heavy as 2/0.

Naught or biscuit ducks run from 3/0 up to 12/0 duck, which weighs 30 oz. for 22-in. width. They are made in widths from 6 in. up to and including 36 in.

General Remarks. In quoting, only the type, number, and width are mentioned. The construction is omitted.

Number ducks are noted for their exceptional strength and wearing qualities and are used mostly in the gray state for utility purposes. Thus, they are found in use as press cloths, felt dryer aprons, canvas, harvester ducks, truck covers, hammocks, sail cloths, mail bags, luggage bags, golf bags, etc. Some qualities are converted into khaki shades, waterproofed, and used for tents, water buckets, knapsacks, etc., for army field use.

Sail and number ducks are invariably made with a blue line woven near each selvage. This is put there for a guide in sewing. The heavier the duck, the farther away the blue line is woven from the selvage.



Wellington Sears Co.

SHELTER-TENT (ARMY-TYPE) DUCK
40" 60x60 9.36 oz.

Examples of Standard Gray Constructions

	No.	Width	Weight
Sail duck	1	22"	18 oz.
	3	22"	16 oz.
	6	22"	13 oz.
	8	22"	11 oz.
	12	22"	7 oz.
	1/0	22"	19 oz.
Extra narrow (number) duck	10	11"	4.50 oz.
Naught or biscuit duck	5/0	44"	46 oz.
	12/0	56"	76.36 oz.
Wide (number) duck	6	36"	21.37 oz.
	10	72"	20.44 oz.

	Construction	Warp Yarns	Filling Yarns
Sail duck	27x19½	7/5	7/6
	29x22	7/4	7/5
	36x26	7/3	7/4
	46x29	13/3	13/6
	49x30	12/2	12/3
	26x19	7/6	7/7
Extra narrow (number) duck	46x30	13/4	12/3
Naught or biscuit duck	26x13½	7/7	7/11
	20x13	7/14	7/14
Wide (number) duck	36x26	7/3	7/3
	46x34	13/3	13/3

To meet a condition of frequent price changes, which often arises in an active market, a "card-basis" price list is used. This basis has been employed for many years and involves the use of a price established on one of each type of the very staple duck numbers. The differences, premiums, etc., applying to the other widths and weights of the same type are worked out. These prices are then fixed and usually run for some years. The card-basis prices are subject to varying discounts as the prices in the cotton-cloth market move. For instance, if a particular style duck is quoted 45% off list, this would mean that for any width or weight of that particular style duck, the price would be the card-basis price, or list price, less a discount of 45%.

Ounce ducks include many special widths and qualities made for particular trades and uses, such as army ducks, shoe ducks, enameling ducks, etc. There are also combed-yarn ducks and waste-yarn ducks. When sold, the width, the weight in ounces, and the type of duck only are stated. The construction is usually omitted. In ounce ducks using single warp yarns, the weave employed is one in which every two warp threads are woven as one with every filling yarn, in a plain-weave motion. This weave, a modification of the basket weave and also used in the oxford, is sometimes referred to as "laid warp." This gives a flat appearance and these ducks are referred to as *flat ducks*. If single filling is used, they are also referred to as *single-filling ducks*. When ply yarns are used in the filling, the fabrics are referred to as *double-filling ducks*. There are no ducks woven in a plain weave using single yarns. Ounce ducks can therefore be divided into the following groups: single-filling flat duck; double-filling flat duck; and ply-warp and double-filling army-type duck.

Single-filling flat ducks are usually sold on the basis of ounces per yard, but sometimes on the basis of yards per pound. S. F., meaning "single filling," is always stated. High-count constructions are used for suitings. In weaving, each pair of warp threads is woven as one. There are A, B, and C grades of S. F. ducks made, according to the quality and cleanliness of the cotton used, B and C grades being dirtier than A.

Widths	Construction	Yarns
29", 29½", 30", up to 72"	50x38 to 88x32	8s to 14s warp 4s to 12s filling

Uses in gray: Linings, shoe uppers, covers for box springs, upholsteries, bookbindings, gaskets.

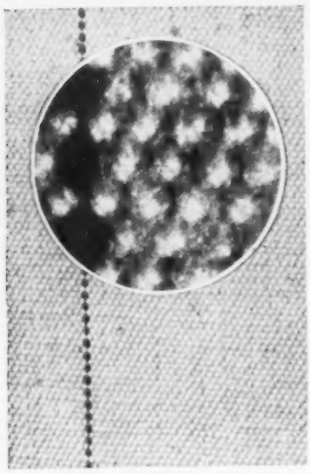
Finishes used: Starched, white, dyed, printed.

Uses in finished state: White-duck pants, washable uniforms, overalls, suitings, summer caps.

Examples of Single-Filling Flat Ducks

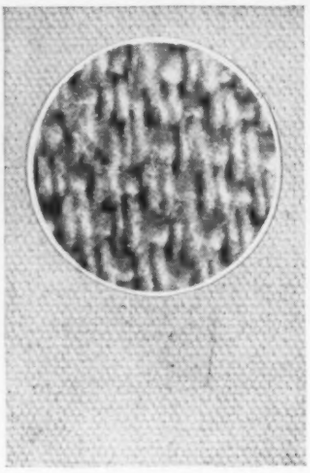
29-30", 8 oz. S.F. (76x30 count) also made in from 5 to 15 oz.
36", 6 oz. S.F., up to 12 oz.
38", 8 oz. S.F., up to 12 oz.
40", 8 oz. S.F., up to 16 oz.
38", 8 oz. S.F. enameling duck (84x28) also made in 46½, 51½, 57, 61½, 63, and 72" widths.
38½" 2.40 yd. per lb., high-count suiting duck.

Double-filling flat ducks are better and stronger than single-filling ducks. "Double filling" means ply yarn which can be 2, 3, or more singles to the ply. The weave is "laid warp," in which each pair of warp threads is woven as one. In this group are most of the enameling ducks, which are coated for oil cloth, imitation leather, etc.



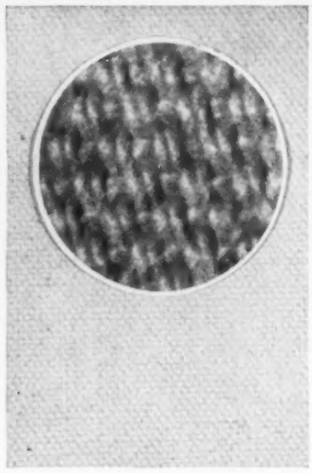
Wellington Sears Co.

WIDE (NUMBER) DUCK
72″ No. 10 (29.45 oz. per yd.) with blue line



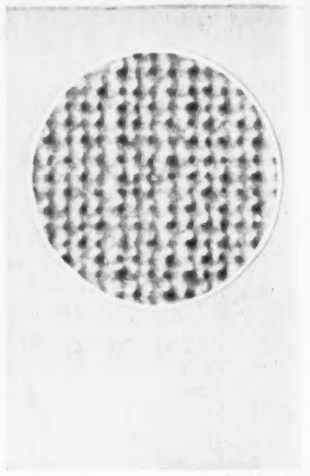
Turner Halsey Co.

SINGLE-FILLING DUCK
29″ 8-oz. S.F. flat duck



Wellington Sears Co.

DOUBLE-FILLING (FLAT) OUNCE DUCK
29″ 8-oz. D.F. flat duck



Pacific Mills

WIDE (BED) SHEETING
81″ 68x72 1.40 yd. per lb.

Very large quantities are also used as a clothing duck.

Uses in gray: Bases for imitation leather, bases for oil cloth, bases for blowout patches, linings, covers, shoe uppers, folding chairs, caps, gaskets, bookbindings.

Finishes used: Bleached, dyed, painted-awning-stripe, water repellent, printed.

Uses in finished state: Overalls, work pants, tents, folding chairs, awnings, trouserings, coats, aprons, smocks, caps, washable clothing, backs for loose-leaf books.

Warp: 12s to 14s. *Filling:* 10/2 to 20/2

Examples of Double-Filling Flat Ducks

29-30″, 8 oz. D.F.—also made in 7 oz. up to 16 oz.
36″, 8 oz. D.F.—also made up to 12 oz.
38″, 9 oz. D.F.
40″, 8 oz. D.F.—also made up to 11 oz.
38″ (88x28) 2.00 yd. per lb., enameling duck (14s, warp, 15/2 filling).

Also made in 42, 44, 46½, 51½, 57, 61, and 72″ widths

Ply-warp, double-filling, army-type ducks are strong, closely woven fabrics, used extensively in different converting trades and by the Army and Navy. They are made with ply yarn in both warp and filling. The ply may be 2, 3, or more singles in both the warp and the filling. The weave is always plain. Army-type ducks are of the same type as (wide) number ducks, but are always of lighter weight. Higher-count and finer-ply-yarn cloths are known as *shelter-tent ducks.*

Uses in gray: Shoe uppers, linings, hammocks, folding chairs, tool kits, laundry bags.

Finishes used: Bleached, sulphur- and mineral-dyed, starched, waterproofed, printed, painted-awning-stripe.

Uses in finished state: Water buckets, wading pools, tents, awnings, hammocks, overalls, work pants, aprons, coats, slacks, looseleaf book covers, pup tents, washable uniforms, tropical clothing.

Examples of Ply-Warp, Double-Filling, Army-Type Ducks

			Warp	Filling	
28½″	54x40	8 oz.	12/2	15/2	army duck
28½″	55x37	10 oz.	14/2	16/3	army duck
30″	54x40	8.42 oz.	14/2	15/2	army duck

Also made in 6, 7, 7½, 8, 9, 10, 12, to 15 oz. for 28½″, and pro rata for wider widths.

40″	60x60	9.36 oz.			
35½″	54x56	8.25 oz.	22/2	22/2	shelter-tent duck
90″	48x48	.66 yd.			laundry-cover duck

Also made in 72″ and 81″.

Shoe ducks are used for shoe linings and are usually made in 37 in. and finished 36 in. They can be D.F. flat ducks or ply-yarn army-type ducks. They are firmly starched in the gray or bleached state. In the unbleached state they are called *brown starched,* and when bleached they are called *white starched.*

Examples of Shoe Ducks

			Warp	Filling	
37″	60x38	8 oz. ply yarns	16/2	19/2	plain-weave army type
37″	52x36	7½ oz. D. F.	36	20/2	laid-warp (flat-duck)

Shoe ducks are usually made in 7, 7½, 8, and 9 oz.

Special ducks. Some of the number ducks and ounce ducks have special names which denote their uses, for example:

				Warp
Mail-bag duck..	32″	37x22	16 oz.	7/3
Belt duck.....	42″	26x15	30 oz.	7/5
Hose duck.....	40″	28x19	14 oz.	8/3
Harvester duck.	44″	40x33	20 oz.	13/4
Waste duck.....	39″	46x22	9 oz.	12

	Filling	
Mail-bag duck..	13/4	plain weave
Belt duck.....	7/7	plain weave—also made in weights from 24 oz. to 32 oz.
Hose duck.....	8/3	plain weave—also made in weights from 8 to 20 oz.
Harvester duck.	12/3	plain weave
Waste duck.....	3	waste filling yarn (laid-warp flat duck)

Combed ducks are not standard ducks but are made on contract. They are made with ply yarns in a plain weave and are usually bleached and given a mercerized finish. They are used for high-class dress uniforms, suitings and shoe uppers.

Example: 37″ 7.25 oz. 35/4 warp 40/4 filling

Ply-warp single-filling ducks are plain-woven suiting or clothing ducks sometimes made on contract.

Example: 28½″ 72x40 6 oz.—plain or with colored-yarn stripes.

Sheeting

Sheetings are plain-woven, carded-yarn cloths in medium and heavy weights. When made for converting, they are usually 40 in. or less in width. They are generally lower in construction than print cloths and are made from heavier yarns—from 10s up to 29s. The yarns used in sheetings are usually heavier in the warp than the filling. They also may be the same yarn numbers. In a few cases, the filling yarns are heavier than those used in the warp. Because of the wide range of yarns used, the narrow sheetings are divided into the following groups:

Class A—coarse sheetings—yarns from 12s to around 15s.

Class B—ordinary sheetings—yarns from around 16s to around 21s.

Class C—lightweight (yarn) sheetings—yarns from around 22s to 29s.

Soft-filled sheetings—made with soft filling for napped flannels, suedes, etc.

Heavy laundry-trade sheetings—Yarns average 12s or 13s and filling is usually heavier than warp.

Wide sheetings are made for bed sheets, etc., as well as for industrial purposes, such as bases for oil cloth and imitation leather, for combining purposes, and for the laundry trade.

Class A—coarse (narrow) sheetings:
Constructions: 40x38 to 48x52.
Yarns: 12s to 15s, or average.

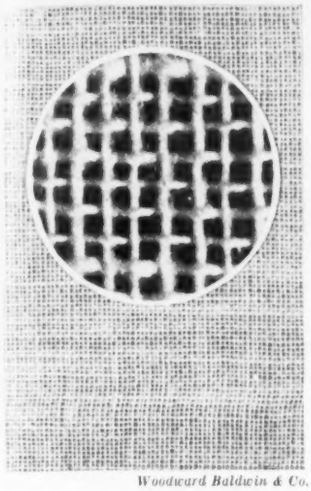
Examples:	36″ 40/38 3.90	40″ 48/48 2.70
	37″ 44/40 3.50	40″ 48/48 2.66
	30″ 48/44 4.00	40″ 48/48 2.85
	36″ 48/44 3.25	40″ 48/48 2.50
	30″ 48/48 3.60	36″ 48/48 2.85
	36″ 48/48 3.00	

Also made in greater widths: 48″ 48/48 2.25, and 54″ 48/48 2.11.

Class B—ordinary (narrow) sheetings:
Constructions: 44x40 to 52x48.
Yarns: 16s to 21s, or average.

Examples:	36″ 52x48 4.00	40″ 44x40 4.25
	36″ 48x52 4.00	40″ 48x44 3.75
	37″ 48x48 4.00	30″ 48x44 4.00
	36″ 48x48 4.00	31″ 44x44 4.50
	31″ 46x46 5.00	37″ 48x48 4.00
	31″ 48x48 5.00	36″ 48x52 4.00
	31″ 48x44 5.00	36″ 48x44 3.60
	36″ 48x48 3.50	

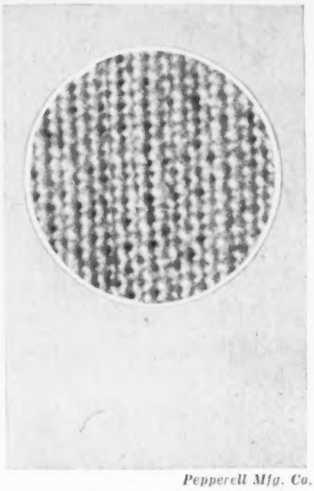
Class C—lightweight (yarn) (narrow) sheetings:
Constructions: 40x36 to 64x68 (usually higher than A and B).
Yarns: 22s to 29s or average.



Woodward Baldwin & Co.

LIGHTWEIGHT (YARN) CLASS C SHEETING

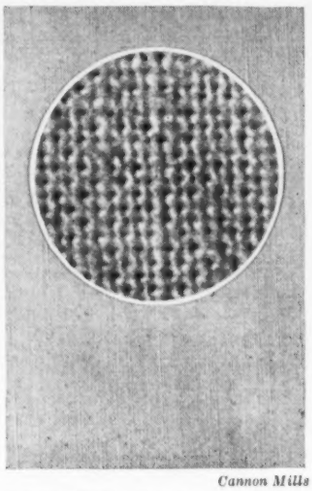
36" 40x40 6.14 yd. per lb.



Pepperell Mfg. Co.

COMBED PERCALE SHEETING

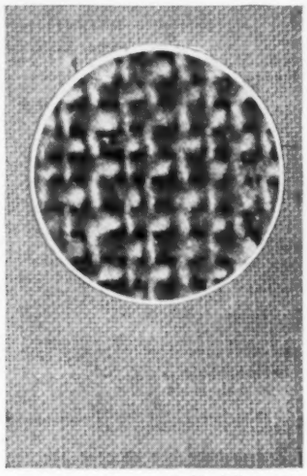
54" 96x108 2.49 yd.



Cannon Mills

CARDED (Light weight) PERCALE SHEETING

72" 84x96



Iselin-Jefferson Co.

SOFT-FILLED SHEETING

40½" 42x44 3.00 yd.

In appearance and construction, the lower-count sheetings of the light-yarn sheetings group are similar to cheese or low-constructed print cloths, but are always *heavier* (because of the yarns employed) when width and construction per inch are comparable.

Examples:

32" 40x40 6.25	36" 48x40 5.50	36" 64x64 3.75
34" 40x40 6.00	36" 44x44 5.50	36" 64x68 3.50
36" 40x36 6.50	36" 48x48 5.00	40" 56x56 4.00
36" 44x36 6.50	36" 48x52 4.70	40" 60x56 3.60
36" 40x40 6.50	36" 52x48 4.70	40" 56x60 3.60
36" 44x40 6.15	36" 56x56 4.25	40" 64x68 3.30
36" 44x44 6.05	36" 60x56 4.00	40" 64x68 3.40
36" 40x40 6.15	36" 64x68 3.75	40" 44x44 5.00
36" 40x40 6.14	36" 56x60 4.00	40" 64x68 3.15

The following are wide sheetings made of light-weight sheeting yarns and used by the rubber-coating, combining, and oil-cloth trades:

52" 48x48 3.85	54" 48x48 3.47
60" 48x48 3.30.	67" 48x48 2.95
56½" 40x38 5.60	46½" 40x38 6.15

The following heavy-yarn (10s to 15s) sheetings are made for the laundry trade:

90" 60x54	.88
90" 58x56	.90
90" 58x58	.88
90" 58x58	.87
81" 58x58	.97
72" 58x58	1.09

Coarse, Ordinary, and Lightweight narrow sheetings:

Uses in gray: Dress shields, pockets, art needlework, mattress covers, box-spring pockets, interlinings, asbestos pipe-insulation coverings, bags, bookbindings, shoe linings, filtering cloths. Wider widths used for bases for oilcloth and imitation leather and for back grays.

Finishes used: Chased, linene, bettled, mercerized, firm-starched (canvas, elastic-duck), wigan, printed-cretonne, French, brown- and white-starched, napped flannel, imitation-chambray, backfilled (pocketing, printed-ticking), shrunk-interlining, friction-calendered, chintz.

Uses in finished state: Wash suits, uniforms, aprons, smocks, draperies, cushions, curtains, work shirts, embroideries, dresses, pocketings, mattress covers, tickings, and interlinings for collars, cuffs, and clothing.

Soft-filled sheetings are made with finer warp yarns and coarser filling yarns. In spinning, the filling yarns are given a soft twist. These goods are napped or raised to obtain a flannel effect, the soft-spun filling yarn giving a good, heavy, napped finish. Usually sold in the unnapped gray state; also sold napped one side or double napped (two sides). In the ordinary napped finishes, they are called *flannels* or *flannelettes* (when finished). After napping, the nap is often sheared down to obtain a smooth suede or duvetyn effect.

For the automobile trade, wide soft-filled sheetings are made with two-ply soft filling for strength. These are napped and felted and are used as headlinings, etc., in automobiles. Other wide S.F. sheetings using single yarns are used by the upholstery trade.

Widths	Constructions	Yarns: Warp	Yarns: Filling
27" 29" 30"	36x44 to		
32" 40" 42"	44x48	18 to 26s	7s to 16s
42½" up to 60"			

Uses in gray state: Pocketings, shoe linings, interlinings, baby blankets, dust cloths, gloves.

Finishes: Napped one side or two sides, felted, suede, duvetyn, bleached, dyed, printed, tarnish-proof and embossed designs for casket trade.

Uses in finished state: Flannel diapers, shirts, underwear, bathrobes, gloves, doll's clothes, etc., bandages, pajamas, casket linings, box linings, silverware (tarnish-proof) cases, trimmings in upholstery trade (couches, divans).

Examples of Soft-Filled Sheetings

29" 42x44 4.45	40½" 42x44 2.50
31" 32x44 5.15	40" 48x44 3.75
37" 42x44 3.20	43" 36x38 4.25
37½" 42x44 3.15	40½" 42x44 1.60
40½" 42x44 3.00	60" 42x44 3.00
40½" 42x44 3.40	59" 42x44 2.50
40½" 42x44 2.00	60" 42x44 2.02
40½" 42x44 4.18	60" 42x44 2.28
40½" 42x44 2.25	60" 38x46 1.35 (2-ply filling)
	60" 42x39 1.30 (2-ply filling)

Wide bed sheetings are used for bed sheets and for bolster and pillow cases. They are higher count cloths than the narrow sheetings and, for the most part, are firmly woven with strong tape selvages. They are made in several qualities, varying in construction and yarns used. Most bed sheets are made in one of two standard constructions—64x64 and 68x72. The combination of yarns and constructions of these cloths give them the maximum wearing qualities possible with their weight. They are sold under branded names advertised for many years. In finishing they are given a "muslin" finish or a smooth, brighter, "percale" finish, with very little sizing. In cheaper qualities, such as 60x60 and lower, the fabric is given a "back-filled" finish to fill the cloth and add weight to it. When sold in the unbleached state, these cloths are referred to as brown sheetings.

Gray Widths	Constructions	Yarns
48" 54" 58" 63"	56x60 68x72	Range from 18s
70" 72" 76" 81"	60x56 68x76	to 28s
86" 90" 99" 108"	60x60 68x68	
118" 126"	64x64 72x72	
	64x68 72x76	

Examples of Bed-Sheeting Constructions

	Warp	Filling
81" 68x72 1.40	23s	21s
87" 60x60 1.97	21s	26s
72" 64x68 1.79	21s	26s
90" 68x72 1.28	23s	21s
99" 64x64 1.36	22s	25s
108" 64x64 1.26	22s	25s

Uses in gray: Bed sheets, pillow cases, mattress covers, bases for oilcloth and imitation leather, candlewick spreads.

Finishes used: Muslin, cambric, backfilled, back-starched.

Uses in finished state: Bed sheets, pillow cases.

Percale sheetings are the finest and most luxuriant sheetings made. Because of the combed yarns of long-staple cottons used, they have a soft and silky finish. The construction is around 200 threads per square inch. They are lighter in weight (and cost less to launder) than the coarser, heavier, standard 68x72 muslin, and are equally if not more serviceable.

Cheaper qualities, made with carded yarns, finer than those used in ordinary bed sheeting, and with constructions around 176 threads per square inch, are called *lightweight percales.* The lighter-weight percales, while finer in count than the standard muslin bed sheeting, do not give the same service.

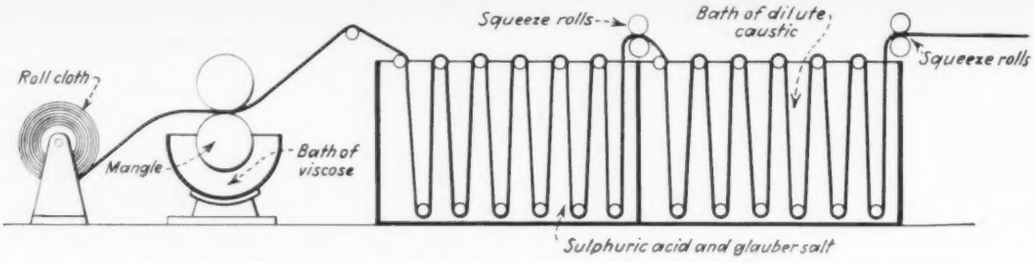
Percales are made in widths from 54" up to 108".

Used for bed sheets and for bolster and pillow cases; also for sail cloth in the gray and dyed state.

Examples of Percale-Sheeting Constructions

All-combed—54" 96x108 2.49 yd.—yarns from 36s to 40s

All-carded, lightweight { 48" 84x92 3.02 yd.—yarns from 30s to 40s
81" 84x96



Range for impregnating cotton fabrics with viscose solution

Use of viscose solutions in treating cotton fabrics to produce

PERMANENT FINISHES

By John T. Gibbons
Textile Consultant

THE term "permanent" as applied to a finish is a relative one, the degree of permanence being judged according to the number of times the fabric can be laundered without changing the finish. Requirements vary for different fabrics and different fabric uses, as some fabrics which are used daily and washed many times must stand a great many more washings than fabrics that are laundered only a few times during the life of the material. For instance, "table linen," which is in many cases treated cotton, must stand at least 50 washings to be considered permanent, while the finish on an organdy is considered permanent if it will stand 10 washings.

Of the various processes for producing a permanent finish, practically all of those now in use can be classified as follows: (1) viscose; (2) acid; (3) alkali; (4) casein and formaldehyde; (5) synthetic resin; (6) various derivatives of cellulose, other than viscose; and (7) cuprammonium. Although the viscose process has been used for years to secure a permanent linen-like handle and appearance, the details are not widely known. In this article, therefore, will be discussed the viscose method, and a subsequent article will go into the other processes. Essentially the process consists of applying viscose to the fabric by impregnating or by coating, depending on whether or not penetration is required. The viscose is prepared in the same general manner as it is for use in the production of rayon. However, the same exacting standards are not necessary, as variations in temperature, percentage of caustic, etc., do not give marked differences on the finished fabric.

Viscose can be made from purified cotton linters, wood pulp, or from a mixture of both. Wood-pulp cellulose is generally used alone when the material is to be applied to a fabric.

Preparation of Solution

The cellulose is bought in bales and generally contains 5 to 7% of moisture. The bales are opened and the sheets of cellulose allowed to condition in the air until the moisture content is uniform. A batch is prepared by using 150 lb. of the cellulose, adding 68 gal. of 42° Tw. caustic to it, and macerating the whole in a mixer until the mass is thoroughly impregnated. Mixing is continued over a period of 90 min. at a temperature of 21° C. The mass is then placed in a press or an extractor and the excess of caustic is removed, leaving a batch weighing about 425 lb. This weight represents the correct proportion of alkali to cellulose for the type of material desired. This material is now shredded into small pieces, and the whole is stored at a temperature of about 20° C. for a period of 72 hr.

After ageing, the material is placed in an xanthator, in which it is treated with carbon bisulphide. For the batch of 425 lb., 37 lb. of carbon bisulphide is added, preferably by means of spraying, so that the liquid is distributed evenly throughout the whole mass. If this is not done carefully, lumps appear, which do not dissolve in a later operation.

While the liquid is being added to the cotton alkali mass, the machine is rotated slowly and the temperature is controlled to about 25° C. Samples are taken from the mixer at stages throughout this process, until an orange color is observed. The mass is then dumped into a dissolver, which is a jacketed vessel equipped with a stirrer. Stirring is continued until a smooth paste is formed and then enough water is added to bring the material to the concentration required. As a rule, a 7% solution is made for impregnating or coating, but after solution is obtained, more water can be added to obtain a lower concentration if it is desired. The dissolving process can be completed in 6 hr., and the mass should be kept cool during this stage.

The solution can be used immediately, but a ripening period of 72 hr. will give much better results in most cases. At the end of the ripening period, the material is ready to apply to the cloth.

After the material is applied to the fabric, it is necessary to precipitate the cellulose onto the fabric. This is done by passing the cloth through a box containing a 6% sulphuric acid solution in which 25% of sodium sulphate is dissolved. The box containing this solution should be lead lined and the rollers made of a material impervious to the acid. Some hydrogen sulphide is given off as a gas, which should be sucked off by means of a fan, as it is toxic and has an offensive odor.

After the cloth has passed through the acid solution, it is washed with warm water and a dilute alkali solution to neutralize any traces of acid that may be present in the fabric. Then the fabric is ready for drying and calendering or other finishing operations necessary to produce various effects. Generally it is dried and calendered on a schreiner calender or is chased to bring out the finish.

ADVERTISING PAGES REMOVED

THE OVERSEERS' CORNER

Report Cards on Workers?

A LETTER has come in to me suggesting that a card record, similar to a school report card, be kept on each piece-rate worker. Good and bad marks on quality and quantity would be recorded in a systematic way, and the records presented to the employees at quarterly intervals for inspection and comment. My correspondent believes that such a system would show the workers their standing in an impartial way and have a good psychological effect.

The same sort of plan can be applied to overseers. Suppose for example, that the card for each overser recorded such items as exceptionally low or high costs, the amount of good or bad work with comments by the superintendent placing the blame for poor work, labor turnover, etc. Properly run, such a system would give a performance record on each overseer that would not be on a personal basis. The management would have facts on which to hand out praise or blame at certain intervals, and the overseers would know that their record would show up in black and white and not be subject to any personal slants of the superintendent.

I know that Crompton & Knowles Loom Works have gone even further and have worked out a yearly Foreman Management Report in which the value of plant, machinery, tools, and equipment are prorated to each foreman on the basis of floor space. This, with the foreman's own direct labor and the shop labor attributed to his department, makes up his year's business. A committee goes over the reports and rates performance on quality, production, handling men, costs, and administration. The superintendent and general manager then go over the reports, compare them with previous years, give recognition for accomplishments, and—without being too critical—point out opportunities for further progress.

Frankly, I am on the fence about the desirability of using a report-card system for the overseers and workers in the average mill. A lot of people are reminded of their school days by a report of any kind and are inclined to object to being treated as children. I presume that good or bad results depend a great deal on the fairness and constructiveness with which the plan is operated. For this reason I would like to hear from any readers who have had experience with such a system, or who have ideas on the subject.

Between Day and Night Overseers

Editor, Overseers' Corner:

I don't think the day overseer should tell the night overseer how to run his department, unless the latter should ask the day man for advice. Fifteen years ago I was a night overseer, and I had to take orders from a day overseer who even went so far as to place my help in their places and warn me to make no changes. Of course I didn't like it, but I had to do as I was told.

This went along for quite a time and I noticed that we were getting considerable bad work. I also noticed that the work done by the day force was poor. One day I observed the superintendent giving the day overseer a scolding because of the large quantity of imperfect work. This was about my starting time, and when the superintendent went away the day man came up to me—as he usually did after a scolding—and started to tell me that the majority of the bad work was done by the night shift. I listened to him and then said:

"Well, Mr. W— you are the cause of the imperfect work. It is all caused by your selfishness and bad judgment. From now on I will run my own department. If you won't give me permission, I'll ask the superintendent."

Mr. W— finally decided to let me run my own affairs, and in two weeks the bad work had practically disappeared. Through my suggestions the day overseer made a few changes with good results also.

What is the opinion of other readers on this? Should the day overseer interfere with the night overseer?

C. J.

Paying Doffers

Editor, Overseers' Corner:

As a subscriber to your TEXTILE WORLD I always read the issue with much interest, and I want to contribute to the Overseers' Corner.

I have read the remarks about paying doffers on page 123 of the April issue and want to point out the manner in which we pay our doffers and interest them in big production and quick work. We have two ring-spinning rooms, each with 60 frames and about 30,000 spindles, and spin an average count of 36s to 40s. We have twelve doffers in each room. No spinner is allowed to stop his frame until the doffers are assembled at the frame and the leading foreman gives the signal.

At the beginning we paid our doffers by the hour, but the result was that many frames were waiting a long time. We next tried paying them by the hank, as we did the spinners, but we found too many spindles running empty. We then changed over to paying our spinners for the poundage of yarn delivered. Our doffers get the average pay of all spinners, so they are interested in the whole production. The foreman of the doffers gets about 20% more.

RUDOLF SIEGL,
Czechoslovakia.

Small Things

Editor, Overseers' Corner:

When reading the article by Mr. Williams, in the May issue, "Keep small things small," one is reminded of the adage, "Great oaks from little acorns grow." No overseer who fails to recognize the value of keeping the small things small can hope to continue to be a success in his position.

Of course, a proper sense of values is indispensable, as no good executive can afford to fritter away his time on unimportant, small things, but he should be able to recognize which of them is an acorn likely to grow into a big oak. It follows that he who cannot properly look after the little things is unable to rightly cope with the bigger problems.

Recently I heard an Overseer say that he liked to change his position frequently because, by so doing, he did not get into a rut as is the danger if a man stays in one position too long. The tendency is to give our best to a new position, and then when it is well organized to let it run in its well-defined rut. Why not adopt a different mental attitude and approach our present position each day

CONTRIBUTIONS

Contributions to "The Overseers' Corner" will be paid for without regard to length. We will be glad to use letters discussing the narrative on page 93 or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.

as though it were an entirely new venture, bringing all of our experience and enthusiasm into play? When we do this we will not look on the small things with a lazy, it-doesn't-matter attitude, but will be constantly on the alert, seeing each problem in its proper perspective.

What a wonderful mill it would be with every executive and every operative always "on his toes!" There would be no question of production and quality, and surely good business, high wages and dividends would be the result.

A DYER.

No One is Perfect

Editor, Overseers' Corner:

I quite well agree with you, Mr. Williams; no one is perfect. This is true of the ordinary workman, but it is more easily detected in the superintendent, overseer, and second hands, as the eyes of everyone are focused on these few individuals.

Finding a man's faults and then criticizing them is beneficial, if the criticism is constructive and is done in a diplomatic, human manner. But when criticism is abusive and becomes contemptible to the extent of ridicule then it is futile, and bears the appearance that the critic is guilty of the same faults and trying to pass the buck, or, as Mr. Williams says, thinks himself a little tin god.

I might say that in the quarter century that I have been connected with the textile industry one of the outstanding men in management of help that I ever knew was a man who had a surplus of temper, but he was an exceptional manager of his inner self and kept this temper when on the job. I never knew him to "bawl out" a man, or give one a cursing. He is cool in all situations, is highly esteemed and a civic leader. He finished only the fourth grade in day school, was in the mills ten years as a machine tender, fixer and second hand, became overseer of the card room of a 75,000-spindle mill, and was finally made superintendent. However, he studied plenty after having become a man of his own, burning lots of midnight oil.

This man, while overseer, always had plenty of time to talk to the newest learner and sweeper, and when approached about some trivial item on his job by some rookie he always had plenty of time to listen and weigh the situation. I have heard him say many times that he had learned as much from these mere infants as he had from the acclaimed experts. What our industry needs is more characters like this.

The overseer or superintendent who thinks that his entire duty is to study reports, who desires to cut wages while adding more work to every employee, and who practices the too common adage, "A man can't be too critical," is primarily a failure. If he gets and delivers anything like expected results, he is nothing short of a modern slave driver.

EAGLE.

Practical Helps for Overseers

Preventing Wrong Twist

I have seen a good many spinning overseers get called down because some bobbins of yarn have been spun or twisted in the wrong direction. This dangerous fault is difficult to detect in the spinning or twisting departments, but often shows up very badly when the cloth is woven and finished. The difficulty is caused by some careless third hand who hasn't his mind on his job and who puts some bands on the opposite from the required way.

In order to prevent this serious error, I believe it is wise to tint the bands and let each shift have a different color, such as blue-tinted bands for the first shift and red-tinted bands for the second shift, etc. By using different-colored bands, the third hands will be more careful when putting on a new band, because they will know that the wrong bands can be easily traced. It is also a good idea to have each third hand run his finger along the bottom of each spindle in the department when he comes on the job every day. If he finds a band traveling in the wrong direction, he should mark it and call the overseer. The overseer cuts off the band, notices the color, and knows at once who put it on.

The same system can be used in rayon throwing.

R. S. J.

Knitting Yarn Containing Weak Spots

When knitting sweaters or other cloth from yarn which contains weak spots for one reason or another, there are a number of things that should be checked.

First of all the machine should be set up properly so that it will not sway and will be absolutely level with the floor. The bobbin or cone from which the yarn is running should not be cut or sticky so that it interferes with the running of the yarn. If there is a stop motion on the machine, or guide holes through which the yarn passes, an inspection should be made to see if there are any rough places. In some cases yarn has a tendency to make holes in the cloth because it catches in a rough place in the yarn carrier. Therefore, it is good practice to take off the carriers and smooth them with emery paper.

When running yarn with weak spots, the stitch should not pull any further than is necessary. The stitch cam should be adjusted so as not to make rough cloth, but in most cases the stitch is pulled too far and therefore makes holes.

Last, but not least, is the way in which the stitch cam is cut. On most knitting machines the stitch cams are made to hold back from three to five needles where the stitch is formed. When running yarn that is weak in places, this is too much of a strain. Therefore remove the cam and grind it down so that it will hold back from one to two needles, and thus lessen the strain. There will be fewer holes and less waste.

If these rules are followed, I know that yarn can be run that could not otherwise be handled.

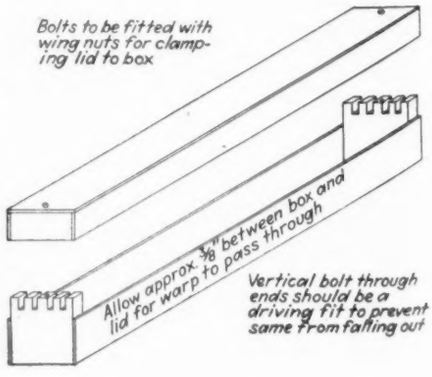
CHARLES H. MILLER

Tying Up Drop Wires

The sketch shows a box used for rigging the drop wires when putting in a new warp. I use the following method of applying the box:

First level the harness, and then work the cross back through the drop wires. I have found it easier to do this if the bars or electrodes are raised and rested on the cage or support. This allows the bars to be shoved closer together.

After the cross is worked through, the drop wires are moved ahead to a point approximately half way between the


Bolts to be fitted with wing nuts for clamping lid to box
Allow approx. ½" between box and lid for warp to pass through
Vertical bolt through ends should be a driving fit to prevent same from falling out

drop-wire supports and the crank shaft, with the drop wires resting entirely on the warp. The box is then shoved up from below, and each electrode fitted in the proper slot. The lid is clamped in place, and the box shoved against the harness and tied.

One man should be able to box the wires in about 10 min.

LOOMFIXER.

Questions and Answers

Equipment for Blanket Manufacture

Technical Editor:

Please let me know what machinery would be required to make blankets out of ordinary farm wool mixed with cotton in the simplest possible way. I want only enough equipment to start making such blankets. Besides the machinery required, please suggest also the size of the yarns used to make a blanket of ordinary weight. Would it be best to dye the stock, or dye the blankets after they are woven? Can the warp and filling yarn be the same, in order that just one kind and size of yarn will be required? (8323)

Unless more-or-less uniform weight and finish of blankets are anticipated, it would hardly be practical to meet the market requirements in this field with one count of yarn. We do believe, however, that a fair duplication of most of the best-selling blankets would be obtained with the use of two counts of yarn—say, 1¼-run and ⅝-run. For instance, a blanket measuring 60x84 in. with a finished weight of 3¾ lb. may be constructed as follows: 11 reed, two in dent, 70 in. wide in loom, 24 picks, 1¼-run yarns in both warp and filling, allowing between 14 and 16% loss in finishing. Then a blanket measuring 72x84 in. with a finished weight of 4½ lb. would call for a heavier construction and yarn, as follows: 11 reed, two in dent, 84 in. wide in loom, 18 picks, 1¼-run yarns in warp, and ⅝-run yarns in filling, also allowing 14 to 16% loss in finishing.

If the 2/2 twill is employed in both cases, good weaving operations should result. The former should be fulled to 63 in. in width with a 5% shrinkage in length, and the latter should be fulled to 75 in. in width with the same length shrinkage. The subsequent operations of scouring and napping would offset these length shrinkages, due to stretch, and give a finished blanket of the respective sizes.

Unless free wool—i.e., wool free from burrs and vegetable matter—is employed, it is much safer to use stock-dyed yarns. Otherwise, carbonizing would be necessary; and in this case, where a blend of wool and cotton is projected, carbonizing would be quite impractical. Therefore, better and more satisfactory results will be obtained by the stock-dyeing process.

It will hardly be necessary to mention that blends composed of wool and cotton fibers require firmer setting in the loom than all-wool mixtures, due to the decreased fulling properties of the former on account of the cotton content.

Yarn-Making Equipment

Picker (preferably a fearnaught).

Cards—approximately one set to every five or six looms.

Spinning mules or frames—approximately one set to every five or six looms.

The ring spinning frames require much less space and give more production than mules.

Dressing and Weaving Equipment

Spooling machines.

Dressing or warping machines with the necessary beaming attachments.

90-in. automatic dobby looms.

Weighing and measuring machines.

Burling tables.

Finishing Equipment

Scouring and fulling machines.

Extractor.

Tentering or drying machine.

Double-acting napping machines.

Shearing machine and steamer.

Dyeing Equipment

One sample and at least two large stock-dyeing kettles.

Extractor and drying machine.

Silk Classifications

Technical Editor:

As a subscriber to TEXTILE WORLD, may I ask you the following in regard to raw-silk classification: What are the required qualifications based upon the necessary winding, sizing, elasticity, and tenacity tests to grade a silk as a 90%, 85%, 83%, 81%, and 78% grade? (8325)

The Japanese Government adopted July, 1935, the following classifications:

Grade	*Special AAA*	*AAA*	*AA*	*A*	*B*	*C*
Composite percentage						
17-denier and below	89	87	85	83	81	79
18-denier and above	89	87	85	83	80	78
Winding breaks						
17-denier and below	30	40	40	50	50	60
18-denier and above	25	30	30	35	35	45

The breaks represent the number found in winding 50 sample skeins 1 hour.

TENACITY GRAMS PER DENIER						
17-denier and below	3.40	3.30	3.30	3.30	3.20	3.20
Elongation, per cent	19%	18%	18%	18%	17%	17%
SIZE DEVIATION IN DENIER						
15-denier and below	0.90	1.00	1.10	1.20	1.20	1.30

Bluing Sewing Thread

Technical Editor:

We are constantly running into trouble with our white thread. The bluing does not seem to go on uniformly, leaving streaks of blue, as are evident in the sample we are sending under separate cover. Will you advise us as to the proper way of bluing white? The thread is also to be treated with a softener composed of starches, wax, and oil. We have an idea that the finishing process may have something to do with our trouble. We have tried bluing it before sizing and we have tried the sizing before bluing, but we cannot seem to get uniform results. (8288)

The streaks on the sample spool were caused partially by softener and partially by the bluing. We suggest first that you obtain a more soluble type of bluing. Dissolve the blue in a pail in 1 to 2 gal. of water, according to amount of dye used, add ½ oz. of sulphonated fatty alcohol or other good penetrant for additional safety, bring to boil, and then add this mixture to the size, which should be close to the boil.

If you still have trouble, make up the sizing or softening bath as follows: When the water is lukewarm, add the bluing from a pail, mix thoroughly, add starch thoroughly mixed with cold water, bring to boil, then add the wax and oils also at boil or close to it. If the softening bath foams, and suds settle on the yarn and show a blue deposit, use a little more of the penetrating agent when dissolving the blue. If the water is hard, although the sample does not indicate hard water, add a little trisodium phosphate, sodium hexametaphosphate, etc., to the softener bath.

Kinks in Crepe Hosiery

Technical Editor:

Inclosed you will find a piece of high-twist-crepe, silk, full-fashioned hose, 50 turns to the inch. Please advise me as to what causes the twisting or curling up of the thread that you will see on the sample. (8331)

The trouble shown by the sample submitted is purely one of kinks developing in the thread while it is being delivered from the cone to the needles. This is a very common difficulty in knitting high-twist, and particularly crepe, yarn. You state that the silk employed is high-twist crepe, 50-turns per inch. This means, of course, that different threads have been twisted in different directions and then doubled into reverse twist 50 turns. If this is the yarn you are using, the reversing process of twisting, along with the processes employed for setting the twist on crepe yarns, should have left the finished twist fairly neutral and at least aided in the prevention of kinks.

To knit crepe yarn satisfactorily, the knitter has to forget almost all he knows about knitting ordinary tram silk or high-twist single tram up to 30 turns, so far as tension adjustments and thread control are concerned. It will be necessary to eliminate all wick tensions and practically all snapper tensions, employing the smallest amount possible of snapper and drop-ring tension to control the thread in the selvage.

Apart from this suggestion, it will be found best to pass the threads only over glass rods or plates in its travel from the cone to the needles; and all surfaces over which the thread necessarily has to pass should be highly polished and thoroughly clean. Such surfaces should be reduced to the lowest possible minimum necessary for effecting delivery of thread to the needles. Of course, it must be understood that the thread is to be passed through the regular moisture trough, but all felt wicks should be eliminated.

In addition to the necessarily careful

adjustment of tension it will also be necessary to maintain as nearly uniform temperature and humidity as it is possible to have in the knitting room. A few degrees variation in either temperature or humidity will play havoc with crepe knitting.

After all has been done that can possibly be done, it will still be found that knitting crepe twist of as much as 50 turns and up is an entirely different undertaking from that of knitting ordinary tram; and the knitter will have to exercise much more care in handling his yarn, watching idle threads for kinks, and drawing such kinks through the carrier tube before they are put in action. Also he must follow up the water level of troughs and maintain the general cleanliness of the machine in a more thorough manner.

Warp Tying-In and Twisting-In

Technical Editor:

We should appreciate information as to the current practice in woolen mills on the following subjects:

We are running a large number of warps, white 20/1 cotton, 1,500 ends, 30 in. wide, with the same pattern. We want to avoid having to draw each warp through drop wires, harness, and reed. Is there a method for quickly tying-in warps without using a tying-in machine?

We have heard of tying-in hands that "twist-in" cotton warps using some glue preparation. We should like some information regarding this.

We are also running woolen warps 8-cut, 1,200 ends, 56 in. wide, and should like to know if it is good practice to "twist-in" these warps at the loom or to use a twisting-in frame. At the present time we are drawing-in each warp separately but should like to cut out some of the labor involved. (8332)

When warps following one another have approximately the same number of ends, it is not customary in modern mill procedure to draw in each warp separately, as twisting-in or tying-in are quicker and more economical operations. These hand operations are generally performed by young men and are purely mechanical processes requiring little or no skill—although, naturally, practice makes for higher speed and better efficiency. The procedure adopted by the majority of mills is as follows:

A long fringe or thrum consisting of from 20 to 30 in. of warp is left in the harness after weaving of the warp has been completed, and a lease is taken. The twister then gathers from the old and new warps a small bunch of about 100 to 200 threads, according to the counts of the yarn, ties the end of each bunch into a knot, and puts what is known as a twister hook through it. This is simply a wire ring about 2 in. in diameter with a narrow neck or loop about 1½ in. long. To the end of this neck is soldered a curved piece of steel formed with a cutting edge. The warp threads are brought in contact with this cutting edge and severed during the twisting operation. The twister hook or ring is attached to a cord which, in turn, is tied around the waist of the twister and serves to keep the respective bunches of warp threads taut. This facilitates the separation of the threads to be twisted.

The twister is guided by the "looming lease" formed at the end of the old warp and the beginning of the new warp and selects corresponding threads from each bunch in consecutive rotation. These threads are automatically cut by the steeel cutter at the extreme end of the ring or hook; and, by a rolling movement of the thumb and index finger of the left hand, the extremities of both warp threads are joined or twisted together.

In the twisting of cotton warp threads, a paste of ground whiting or chalk is used to make the two ends of the warp threads adhere to each other; whereas in linen, woolen, or worsted warps it is the general practice to tie or knot the ends together in lieu of twisting.

It is not necessary or advisable to remove the old warp from the loom to a twisting frame preliminary to the twisting or tying-in operation, as sufficient room and adequate facilities are provided behind the loom for this operation.

Although the value of warp tying-in machines has received recognition in the cotton, worsted, rayon, and silk fields, such equipment has not been extensively adopted in the woolen field, due to the frequent changes of warp specifications commonly necessary in the manufacture of woolen goods. However, the machines are mechanically applicable to woolen-mill use and are found advantageous where the character of the warps changes infrequently. The adoption of warp twisting-in machines has been confined to the silk and rayon mills.

Sizing Knit Goods

Technical Editor:

We wish to size tubular knit cotton fabric so as to prevent rolling when cut from the roll in the raw knit state. We wish to take the roll of fabric from the knitting machine, tumble and saturate it in a laundry machine or a still tub, extract, dry in Hurricane dryer and roll up through hot mangle. We should like the sizing to be applied in the laundry machine operation preferably in a cold solution. Can you advise us of a satisfactory method for handling this problem, together with the necessary material and formula? (8312)

It is difficult to secure a good sizing job on cotton tubular knot goods which have not been thoroughly bottomed or prepared for dyeing or bleaching. If you take the fabric directly from the knitting machine and put it in a laundry machine, it is going to be difficult to wet out the goods, remove all the natural impurities in the cotton, and, at the same time, make the goods absorbent so they will take up the size properly.

It would be preferable to use a reel type dyeing machine where the fabric could be thoroughly boiled out while it rotates with a small amount of sulphonated castor oil and soda ash. When the goods have been thoroughly boiled out, and the wax, pectins, etc., have been removed from the goods, the fabric can be rinsed and the properly cooked starch solution can be applied. In this way fairly good penetration will be obtained.

If you attempt to use the type of machine which you have mentioned you have and no facilities for securing a boil-off, we are inclined to believe the starch will remain on the surface of the goods and give an unsatisfactory handle. However, in the event you decide to go ahead with your present equipment, it would be our suggestion that you obtain one of the very soluble varieties of starches sold to the laundry trade for starching white goods, butcher's aprons, etc., and use about 10 lb. of this type of starch to every 100 gal. of water in the laundry wheel. If you have a reel machine and boil out the goods before sizing, it will not be necessary to use so highly soluble a starch.

Shaker Motion for Leno Weaving

Technical Editor:

Kindly advise what attachments, if any, are applied on 13-tooth vibrator head-motion looms to raise the ground harness and lower the doup harness to the center of the shed and return them to their original position between the insertions of successive picks of filling—in other words, in order that the ground and doup ends may meet and cross each other and then return to the bottom and top sheds, respectively. (8321)

The appliance you require is nothing more or less than a shaker motion suitable for your special type of loom, of which there are several. In all open-shedding types of loom it is essential to have shaking equipment of some kind; and in dobby weaving the loom is sometimes fitted with a shaker cam and the necessary connections. Again, it may be accomplished by means of suitable connections from the crank arm of the loom. Loom makers now provide special attachments to double-lift dobbies for the purpose of providing a suitable shaking motion.

In top-douping in a double-lift open-shed dobby, an effective shaking motion may be obtained by connecting the standard heddle to two contiguous jacks, both of which are pegged to lift when the standard is required to remain at top. When the half-movement is necessary, one is pegged to fall, and the other to rise, the shaking thus being done only when required.

From Nisbet's "Grammar of Textile Design" the following excerpt bearing on this special method explains the operations involved very clearly:

"One of the most efficient and inexpensive methods of shaking with an open-shed, double-acting dobby is to connect two contiguous jacks of the dobby to each heald that requires shaking, and operate them from the pattern lags as required. By this means a heald may be lowered by one jack until it falls half way, when it is caught and taken to the top again by the ascending fellow-jack. By governing the operation of shaking from the pattern lags, this arrangement is superior to all other shaking devices, as it enables shaking to be performed only when it is necessary, and at the exact moment when it is most effective; whereas other shaking devices operate for every pick whether shaking is required or not, thereby vibrating healds and warp threads unnecessarily and detrimentally."

In conclusion it may be stated that shaking may be accomplished with a top-doup harness, either by raising doup heddles or else by depressing the heddles governing standard or regular warp threads half way

—the choice being frequently quite optional.

Therefore, by adopting the method outlined above, making use of the equipment already provided by the loom makers, little difficulty should be experienced in obtaining satisfactory results.

Sewing Thread Weak

Technical Editor:

We inclose a sample of six-cord cotton sewing thread, size 50, and shall appreciate your opinion of the cause of the weak, brittle condition of the cotton in it. We have had a great deal of trouble with this thread and have been unable to determine definitely the cause of it. The strength is very uneven. The thread on some spools in a box will have satisfactory strength, and on other spools will be extremely weak. On some spools the strength varies in different parts of the spool. Sometimes the outside layer is strong and the thread farther in the interior of the spool is weak; sometimes just the opposite is true.

The bleaching process used in the mill finishing the thread is the hydrogen peroxide process and, as far as we have been able to find out by inspection and conversation with the operator, is carefully controlled. We have not been able to obtain in the weakened thread any evidence of oxycellulose by reduction of Fehling's solution.

When examined under the microscope, the single plies of the thread have a very fuzzy appearance and there are bunches of fibers that look as if they have been sheared off. It was our opinion that the cotton fibers themselves did not have the appearance of good quality cotton. They seemed to have fewer twists and more irregular form than usual. We were not able to get staple because of the brittle condition of the cotton.

The hardest point to explain is the irregularity. We get whole boxes that are perfectly good thread, and then another box may have one spool that is all weak. Other spools vary in strength. On this particular spool from which we are sending a sample strength tests on the outside layer gave an average breaking strength on a single strand of 2 lb. while farther into the spool we obtained values as low as 0.4 lb. (8290)

Our examination indicates that the last two twists were about correct, but we could not take the single-yarn twist on account of the staple length. It is our opinion that the fault lies in the staple used. It seems to have two ends, but they are so close together that stapling is difficult. The fact that the spinner could produce so smooth a six-cord thread from so short a fiber is a tribute to his ability.

The shortness of the fiber length would account for the irregularity, for there will always occur places, when such short staple is used, where the ends just touch instead of being interlocked. The shorter the staple, the greater is the number of these places naturally, with consequent breaking.

We could find no evidence of real injury from the bleaching, but we advise the following procedure: Obtain a sample of the unbleached yarn and take it apart to ascertain if the same results are found. If they are, that settles the matter. If not, investigate the bleaching and find if the mill is boiling off with any peroxide in the boil-off liquor. With mineral-oil stains in gray yarn and peroxide in the boil-off, you have a condition pregnant with possibilities of trouble. While the white does not show any oxycellulose, it shows that it was certainly not underbleached.

Personal News

A. F. Burgess has been named assistant superintendent of weaving at Farr Alpaca Co., Holyoke, Mass. He resigned some time ago as treasurer of Taber Mill, New Bedford, previous to which he had been associated with Bates Mfg. Co., Lewiston, Me.

Tom Riding, who has been designing for Crompton (R. I.) Co., for the last eight years, has accepted a similar position with the Sanford (Me.) Co. He is succeeded at Crompton by **Joseph Rozen,** who has been with Lorraine Mfg. Co., Pawtucket, R. I., for five years and with American Velvet Co., Stonington, Conn., for one year.

George I. Melton has been promoted from helper to maintenance man in the electrical department of Lancaster, S. C., plant of Springs Cotton Mills.

E. O. Bishop has been appointed overseer of weaving at Gayle plant of Springs Cotton Mills, Chester, S. C.

Frank Gurley has been appointed overseer of carding at Fitzgerald (Ga.) Cotton Mills.

Lester Brooks is now overseer of the cloth room of Rushton Cotton Mills, Griffin, Ga. For a year or more he has been traveling for the Harris Mfg. Co., mill and reed supply company of Atlanta, Ga.

A. M. Fincher is now overseer of spinning, twisting and winding at Atlantic Cotton Mills, Macon, Ga., succeeding **W. J. Ward.** He was formerly associated with Macon, Ga., plant of Bibb Mfg. Co.

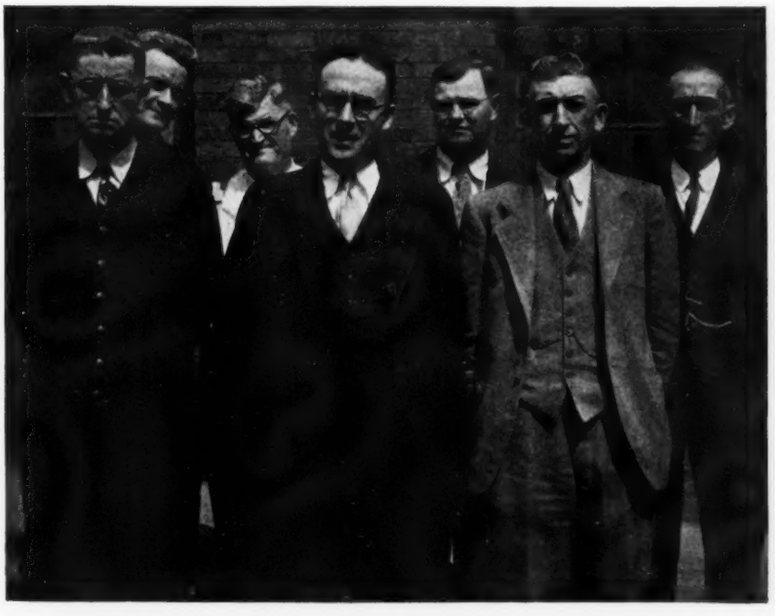
ROBERT L. ROGERS, of Oakboro, N. C., who has been awarded the medal given annually by the National Association of Cotton Manufacturers to the most proficient student in the graduating class of the Textile School at North Carolina State College. He served as superintendent of the 1936 Students Textile Exposition and was President of the Tompkins Textile Society for the current school year. Mr. Rogers is a son of B. M. Rogers, superintendent of Oakboro Cotton Mill. His brother, W. R. Rogers, assistant superintendent of Patterson Mills, Roanoke Rapids, N. C. Robert Rogers has accepted a position with the Drayton Mills, Spartanburg, S. C.

L. A. Beckett is now overseer of carding and spinning at the Sally B. plant of Avondale Mills, Sylacauga, Ala.

William H. Supple is now overseer of dyeing at Wallkill (N. Y.) Mfg. Co. He was formerly with Danbury (Conn.) Mills.

Max W. Higgins, formerly of Mooresville (N. C.) Cotton Mills, has accepted

OVERSEERS AND SUPERINTENDENT AT INMAN (S. C.) MILLS



Left to Right Front Row—Fred Tindall, master mechanic; N. G. Hardie, superintendent; W. W. Gregory, overseer clothroom.

Second Row—T. E. Stone, overseer weaving; L. E. Wofford, night superintendent; S. B. Smith, overseer spinning; Robert Wilburn, overseer carding.

THE OVERSEERS' CORNER

the position of overseer in charge of warp preparation, dyeing, and weaving at Allen Mills Co., Troy, N. C.

Carl O. Noble, formerly of Oxford, Mass., is now overseer of finishing at George W. Watt Woolen Co., Norristown, Pa.

George F. Edson, formerly with Uxbridge (Mass.) Worsted Co., is now overseer of finishing for Amos Abbott Co., Dexter, Me.

Wallace H. French is now overseer of dyeing at Atlas Underwear Co., Richmond, Ind.

F. Donald Jones has taken the position of designer for Stanley Woolen Co., Uxbridge, Mass.

J. T. Forrester has been promoted to assistant superintendent of Spencer Mills, Inc., Spindale, N. C. His position as designer has been filled by **J. L. Padgett,** and **John Franks** has been made overseer of weaving.

R. T. Stutts, formerly overseer of carding at Monarch Mills, Lockhart, S. C., has become superintendent of Woodside Cotton Mill units at Simpsonville and Fountain Inn, S. C.

J. R. Kirkpatrick has been appointed superintendent of carding at Lockhart, S. C., plant of Monarch Mills. He was formerly superintendent of J. W. Saunders Cotton Mill (No. 2 plant), Magnolia, Miss.

Waller Danhoff, formerly in the carding department of Lancaster, S. C., plant of the Springs Cotton Mills, has accepted the position of overseer of carding at Chiquola Mfg. Co., Honea Path, S. C.

M. M. McCann, formerly with Burlington (N. C.) Mills as supervisor of research in chemical manufacturing and dyeing and finishing, has joined Warwick Chemical Co., in charge of technical service.

A. M. Fincher, for many years with Bibb Mfg. Co., Macon, Ga., is now overseer spinning, twisting and winding, Atlantic Cotton Mills, Macon, succeeding W. J. Ward, resigned.

Jake Mehaffey, of Manchester, Ga., is now overseer weaving at Rushton Cotton Mills, Griffin, Ga.

Frederick Langley, formerly with Joseph Noone's Sons Co., Peterborough, N. H., has been put in charge of spinning at the Wood Worsted Mills, Lawrence, N. H.

Alfred Martineau has been named overseer of burling and mending by the Faulkner & Colony Co., Keene, N. H., succeeding **Harry K. Stearns,** resigned.

J. R. Jolly, recently transferred from the Columbus, Ga., plant of the Bibb Mfg. Co., to shift foreman at the No. 2 plant, Macon, Ga., has been promoted to overseer of spinning, spooling and finishing at the Macon plant.

Joe F. Pittman, formerly with the efficiency department of Bibb Mfg. Co., Macon, Ga., has been promoted to overseer of the knitting mill at Macon.

J. O. King, superintendent of the weave room of Werthan Bag Co., Nashville, Tenn., was given a farewell party in June. He will be connected in the future with John P. King & Co., Augusta, Ga.

William C. Calhoun, formerly with the knitting mill of Bibb Mfg. Co., Macon, Ga., has been promoted to shift foreman of No. 2 twisting and winding.

L. M. Thompson, overseer of spooling and warping at Bibb Mfg. Co., Columbus, Ga., has been promoted to office manager of that plant.

Frank Brazeal of Proctorsville, Vt., is one of the chief proponents of a Vermont mill overseer association to promote social relations and the dissemination of practical information. A meeting was scheduled July 11 at Lowell Lake, Chester, Vt.

H. M. Belk, resigned as plant engineer for Rock Hill, S. C., plant of Aragon-Baldwin Cotton Mills, to accept a similar position with American Spinning Co., Greenville, S. C. **J. L. Conner,** his assistant, succeeds him.

Bill Weaver, formerly with the Judson Mills, Greenville, S. C., is now night overseer of weaving at Blue Ridge Rayon Mills, Alta Vista, Va.

J. W. McGraw is the new overseer of weaving at Avondale, N. C., plant of Cliffside Mills. He formerly held a similar position with Grace Cotton Mill Co., Rutherfordton, N. C.

Arthur Nuttall, of Goodyear Fabric Corp., Devon Mills, New Bedford, Mass., has been transferred to Goodyear Decatur (Ala.) Mills as night superintendent. **Bennie T. House** has been promoted to overseer of weaving, and **Hardy D. Davis** has been promoted to

FATHER OF EIGHTEEN

A. L. Ellis, overseer of spinning, Nos. 1, 2 and 3 mills of Pelzer (S. C.) Mfg. Co., is the father of eighteen children, sixteen of whom are living. He is 57 years old, started in the mill at the age of 12, and will have been in the industry an even 45 years in November. For the last 20 years, Mr. Ellis has been at Pelzer, although prior to that he put in service at Iva, Anderson and Pendleton, S. C. His hobbies include fishing, baseball, church and community activities. He is another one of the men in the industry who got much of his early training under Captain Smythe. Editor's Note—TEXTILE WORLD would like to have the picture of any other overseer who can surpass, equal or even approach Mr. Ellis' family record.

HERE IS A LOOMFIXER-FARMER

ABOUT 30 YEARS ago Benjamin F. Hayes was disturbed because a number of loomfixers were taking the brakes off looms. He considered the brake as one of the best devices that had ever been applied to a loom, and he thought the other loomfixers all wrong. And so he wrote an article which was duly accepted and published in TEXTILE WORLD. He has been contributing on and off ever since.

Now that his years of wandering have passed, Mr. Hayes leads as independent a sort of life as he can arrange. In the summer months he likes to work on his farm in North Andover, Mass., (he lives in one of the oldest houses in the town) and in the winters, when it is cold, he works in the mills if a good opportunity turns up. All the time, however, even when pitching hay, he thinks of looms. He is an inventor who doesn't bother about patents. A man in his position, he believes, can waste a lot of money trying to get patents on ideas that may turn out to have been thought of by someone else, and he prefers to take his ideas to machinery manufacturers and receive his compensation from them.

Mr. Hayes has been around a bit in his days, but here are some of the highlights: He was born on a farm in England and came to this country when seventeen; first worked as a spinner in Haverhill, Mass., but decided to learn weaving; started the first section of looms in the Wood Worsted Mills, Lawrence; had a plant of his own in Franklin, N. H., but things went bad and he had to start all over again; the longest time he stayed at one plant was the seven years he spent at Selden Worsted Mills, Lawrence.

P.S. His wife said he should put on good clothes for the picture, but we insisted on a pose of the loomfixer-farmer.

second hand of spinning at the Decatur plant, succeeding **H. M. Dial,** resigned.

W. H. Conner has resigned as overseer spinning, Plant No. 1, Chadwick-Hoskins Co., Charlotte, N. C.

W. G. Lockey has been promoted from second hand to overseer spinning of Plant No. 1, Chadwick-Hoskins Co., Charlotte, N. C.

S. M. Sheham, second hand of weaving, has been promoted to overseer at Grace Cotton Mill Co., Rutherfordton, N. C.

Brumley D. Pritchett, a graduate of the A. French Textile School, Georgia School of Technology, is now overseer weaving at Plant No. 1, Georgia-Kincaid Mills, Griffin, Ga.

F. C. Fowler has been promoted from overseer weaving second shift to overseer weaving first shift at Mill No. 1, Chadwick-Hoskins Co., Charlotte, N. C.

A. R. Gregg has resigned as overseer weaving at Plant No. 1, Chadwick-Hoskins Co., Charlotte, N. C.

P. J. Bennett, of Drayton Mills, Spartanburg, S. C., is now second hand of weaving at Victor Monaghan Co., Greer, S. C.

J. T. Chalmers is now overseer weaving at Springs Cotton Mills, Kershaw, S. C. He is a brother of J. F. Chalmers, superintendent of Greenwood Cotton Mill.

H. J. Reid has become night superintendent of Scottdale (Ga.) Mills, having been promoted from overseer of weaving.

Albert N. Martin, who for five years was overseer of carding at the Kilburn Mill, New Bedford, Mass., has resigned and is succeeded by **Ernest Lee,** a former employe in the Kilburn carding department. Mr. Martin received a Gladstone traveling bag from employes in the department.

Fred Green, formerly of Anderson, S. C., is now chemist at the Columbus, Ga., Mfg. Co.

Arthur C. Davis has resigned as overseer of the dyeing department at Seneca Falls, N. Y., Knitting Co., to accept a position as superintendent of the Glenside Woolen Co., Skaneateles Falls, N. Y.

B. F. Underwood has been advanced from overseer of carding to superintendent of Piedmont (S. C.) Mfg. Co., succeeding **C. M. Moore.**

There is a Right Way

for fixers and section hands to use tools for repair work

By L. L. Kingsford

MISUSE of tools by fixers and section-hands is expensive. Every overseer has run across a section-hand who has to do a job over three or four times, and even then the second-hand may have to put on the finishing touches.

As in every field of activity, the handling of tools depends upon a set of habits, and it is important to see that these habits are good ones. Once the approved methods have been settled upon, they should be taught to all the men, particularly new men just breaking in. It is then merely a matter of the acquirement of the necessary degree of proficiency to make a skilled handler of tools out of the novice.

One good habit of a shrewd worker when taking apart a machine is that he marks every piece, so that he will be able to get the parts together again with the least loss of time. And yet the writer has seen men who have had years of experience in fixing take out parts without marking them, let them lie around a day or so, and then have all sorts of trouble getting the proper connection between the pieces. It is best to play safe by putting an identifying mark on the parts, such as the "R's" in Fig. 1. Another little kink that will save time is to cut a slot in a refractory setscrew with a hacksaw (Fig. 2) and use a screwdriver to turn the setscrew. A phase of the work that will bear careful study is correct filing. Not only should the proper files be used, but the correct method of filing should be worked out.

A section-hand, if he has any aptitude at all, becomes a remarkably fast worker, because of the repetitive nature of the repairs in his section. However, like the all-round education which is so helpful in the specialized work which a man may take up, training in the use of many tools will be of great help to a fixer or section-hand. It gives him a wider field of experience and knowledge to draw upon in the solution of any untoward problems that may arise, and it may be the means of helping him to work up short-cuts in methods.

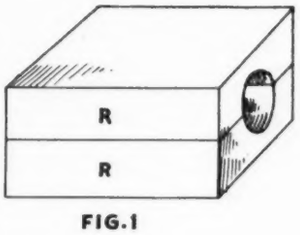


FIG. 1

FIG. 2

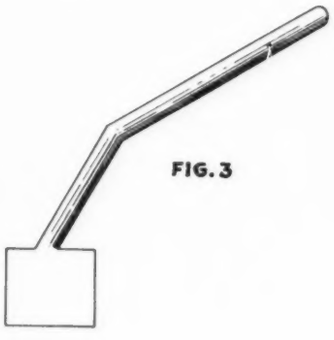


FIG. 3

Responsibility

In order that a man may become an expert handler of tools, it is necessary that he be given his due share of the responsibility in the making of repairs. The system of having several men make repairs on a machine or a section should not be countenanced. It provides the men with a loophole for evading the blame in case the repairs are not done correctly. There are some men who, through lack of proper training and coaching, have to do a job over and over again before it can be called a success. Such men hold a good man back when the repair work is a community affair, and they are often not found out until they have to do a job alone. Once such workers are discovered, however, it is incumbent upon the management to find out whether an intensive course of training will make them better fitted for their work.

A part of every course of training in the manipulation of tools should include instruction on the use of an adjustable wrench as a wrench—and not as a hammer. How often does one see a careless fixer or section-hand tap a nut, a setscrew, or a pulley key with a wrench, until eventually the tool is so badly nicked that the adjustment feature will not work properly. As a result of this maltreatment, some time will be lost every day in trying to get the tool to work.

Emergency Jobs

No discussion of this subject would be complete without touching upon the devising of tools. The reason is obvious; at some time in the routine of work there will crop up an emergency job, for the successful mastering of which the fixer will find his equipment entirely inadequate. He may be able to complete the job; but at a heavy sacrifice of time during which the machine is inoperative; or the tools may fail him altogether. The writer well recollects a mill which had trouble getting a certain type of machine to make a neat package. The trouble lay in one special cam working loose. This cam was situated among a cluster of gears, and the setscrew was so placed as to make it extremely difficult to get at. Because of this fact, the ordinary open and adjustable wrenches could not fasten the cam securely enough, and it was not until a special off-set socket wrench (Fig. 3) had been devised that the cam could be properly secured on the camshaft. A simple remedy, but it proved most efficacious, and shows that it is not always necessary to get up some outlandish-looking or intricate contrivance to solve a perplexity.

LOOM PATTERN CHAINS

For foundation weaves

A CONVENIENT table listing the proper working orders of the harnesses for the most common weaves of broad goods, showing both straight and skip entries. *Copyright, 1936, by S. C. Veney*[1].

STRAIGHT ENTRY

Taffetas or Plain-Weave Alpacas

PICK	4h[2]	6h	8h
1	1-3	1-3-5	1-3-5-7
2	2-4	2-4-6	2-4-6-8

Twills, Serges

PICK	3h	2/2[3] 4h	3/2 5h	5/1 6h	4/2 6h	5/2 7h
1	1	1-2	1-2	1	1-2	1-2
2	2	2-3	2-3	2	2-3	2-3
3	3	3-4	3-4	3	3-4	3-4
4		4-1	4-5	4	4-5	4-5
5			5-1	5	5-6	5-6
6				6	6-1	6-7
7						7-1

PICK	2 Pick Gros Grain 4h	2-1 Faille 4h	Romaine 4h
1	1-3	1-3	1-2
2	1-3	1-3	1-2
3	2-4	2-4	3-4
4	2-4		3-4

Satins

PICK	4h	5h	6h[4]	7h	8h	9h	10h	11h	12h	13h	16h
1	1	1	1	1	1	1	1	1	1	1	1
2	3	3	3	4	4	5	4	5	8	6	4
3	2	5	5	7	7	9	7	9	3	11	7
4	4	2	2	3	2	4	10	2	10	3	10
5		4	6	6	5	8	3	6	5	8	13
6			4	2	8	3	6	10	12	13	16
7				5	3	7	9	3	7	5	3
8					6	2	2	7	2	10	6
9						6	5	11	9	2	9
10							8	4	4	7	12
11								8	11	12	15
12									6	4	2
13										9	5
14											8
15											11
16											14

Double-Face Satins, 8-Bind

PICK	16h
1	1-2-4-6-10-12-14-16
2	2-4-6-7-8-10-12-16
3	2-6-8-10-12-13-14-16
4	2-3-4-6-8-12-14-16
5	2-4-6-8-9-10-12-14
6	2-4-8-10-12-14-15-16
7	2-4-5-6-8-10-14-16
8	4-6-8-10-11-12-14-16

SKIP ENTRY

Taffetas or Plain-Weave Alpacas

PICK	4h	6h	8h
1	1-2	1-4-5	1-2-5-6
2	3-4	2-3-6	3-4-7-8

Twills, Serges

PICK	3h	2/2 4h	3/2 5h	5/1 6h	4/2 6h	5/2 7h
1	not	1-3	1-4	1	1-6	1-6
2	used	2-3	1-3	3	1-3	1-3
3		2-4	3-5	5	3-5	3-5
4		1-4	2-5	2	2-5	5-7
5			2-4	4	2-4	2-7
6				6	4-6	2-4
7						4-6

PICK	2 Pick Gros Grain 4h	2-1 Faille 4h	Romaine 4h
1	1-2	1-2	1-3
2	1-2	1-2	1-3
3	3-4	3-4	2-4
4	3-4		2-4

Satins

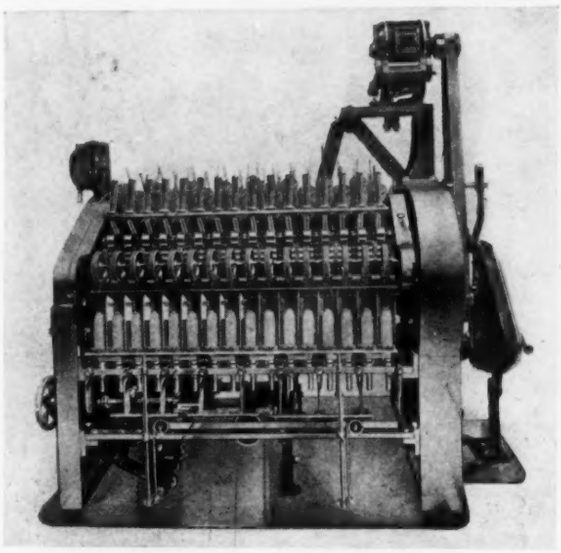
PICK	4h	5h	6h	7h	8h	9h	10h	11h	12h	13h	16h
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	5	7	7	9	7	9	4	11	7
3	3	4	6	6	8	4	6	5	8	13	
4	4	3	5	3	7	10	3	8	5	4	
5		6	4	2	6	5	11	9	2	10	
6		2	3	8	5	2	8	12	12	16	
7			2	5	4	8	5	2	9	5	
8				4	3	3	2	3	6	11	
9					2	9	10	6	3	2	
10						6	7	7	13	8	
11							4	10	10	14	
12								11	7	3	
13									4	9	
14										15	
15										6	
16										12	

Double-Face Satins, 8-Bind

PICK	16h
1	1-3-4-7-8-11-12-16
2	3-4-7-8-11-13-15-16
3	3-4-8-10-11-12-15-16
4	3-5-7-8-11-12-15-16
5	2-3-4-7-8-11-12-15
6	3-4-7-8-12-14-15-16
7	3-4-7-9-11-12-15-16
8	4-6-7-8-11-12-15-16

[1] All rights reserved by author.
[2] "h" represents harness, "8h" therefore means 8-harness entry.
[3] 2/2 for twills means 2 ends up, 2 ends down.
[4] Broken-leaf satin.

NEW MACHINERY & PROCESSES



Worsted Ring Frame

The Parawind large-package ring frame for worsted yarn has been developed by Prince-Smith & Stells, England, and is being marketed in this country by Atkinson, Haserick & Co., 152 Congress St., Boston. The new spinning frame is an addition to the Velox and Magnum models previously brought out, and is introduced to meet the demand of spinners who require a large-package frame for producing knitting and weaving yarns (in a range of 48s to 70s) that have to be twisted or wound later.

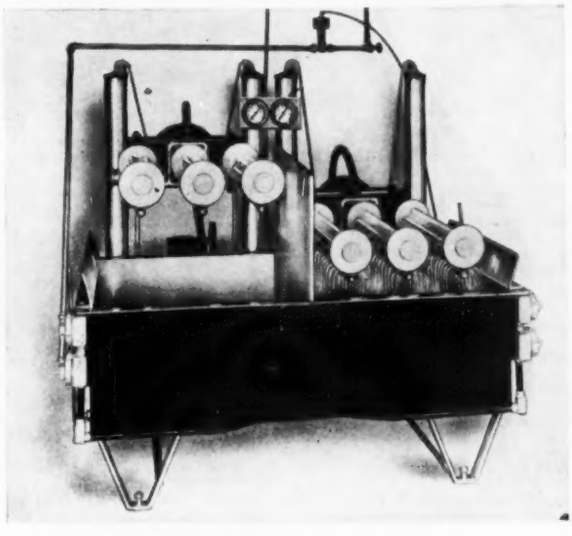
The machine is a standard ring frame fitted with a special attachment to the builder motion. A parallel wind is employed, but the special motion varies the length of the traverse in such a manner that the nose of the package is diminished, giving the package the appearance of a spool build when full. By this means, it is possible to employ the parallel wind and, at the same time, eliminate the bobbin head. The distance from the pot-eye to the top of the bobbin is thus reduced to a minimum, and the spinning properties are improved.

The following advantages over the two other models are listed: (1) More uniform drag throughout the whole of the spin; (2) the wind obviates the risk of yarn being soiled through exposure to the atmosphere in foggy weather; (3) reduced strain on yarn in subsequent operations because of the build of the package; (4) 4¾ oz. of yarn on bobbin; and (5) spindle speeds up to 6,500 r.p.m., depending on counts and qualities. The machine, of course, possesses all the usual advantages of large-package spinning.

Skein Soaking or Tinting Machine

Elimination of undue force and pressure on delicate filaments is featured in the skein soaking and tinting machine brought out by Johnson Engineering & Mfg. Co., Wilkes-Barre, Pa. The skeins are held by the usual porcelain arms, but most of the impregnation is accomplished by spray heads directly under the arms. The spray is upward and in opposite directions, giving both sides of the skeins an equal amount of the solution, so that the uniform weight eliminates chafing when the arms revolve. The spray pipe itself was developed to give an even spray of liquid from one end of the pipe to another. This is accomplished mainly by the use of a spreader, which is placed inside the pipe. The spreader is so shaped that it compensates for any differences in the pressure or velocity of the liquid flowing through the pipe, and thus insures delivery of the same volume of solution through each perforation.

Only a quantity of the solution sufficient to fill the pumps is necessary (in addition to that which is suspended in the yarn), and the bottom of the skein need not contact the solution. The machine is so designed that, with additional piping from the pumps to the storage tanks, the solution can be changed and saved. The pumps have a capacity of 45 gal. per min. A temperature-control regulator is furnished to regulate temperatures between 100 and 140° F. A time switch for stopping circulation after any predetermined time is optional equipment. The tanks are steam-jacketed and Monel metal or stainless steel lined, as specified. The machine has six arms, each holding 10 lb. of dry yarn, and treatment time is about 4 min.



Single-Unit Hosiery on Single Heads

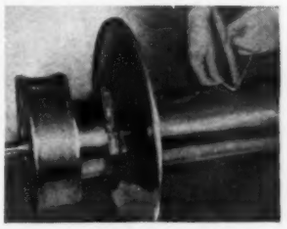
Two new models of the single-head full-fashioned hosiery machines built by Wildman Mfg. Co., Norristown, Pa., are designed to knit single-unit stockings. Model TL knits stocking blanks which require looping of the heel tabs to the sole. Model TC produces blanks with the sides of the heel tabs attached to the sole, as in the blanks produced by the more usual legger-and-footer system of knitting. In either case, however, the completed stockings are of the standard French-foot type.

Just before the heel tabs are knitted, on both models, a transfer bar attached to the narrowing machine takes the instep stitches from the needles and carries them to the back of the needles, where they are held until the heel tabs are completed. The transfer bar moves away from the needles as the heel tabs are being knitted, so that the sinkers do not stab into and open up the corners of the fabric between the heel tabs and the instep and thus make the transfer or looping of the heel tabs difficult.

On the Model TC, after the heel tabs are completed the transfer bar puts the instep stitches back on the needles and the operator tops on the heel tabs. The knitting of the foot is then completed. On this model the needle bar is arranged to make a wide stitch near the inside edge of the heel tabs so the tabs can be easily and quickly run on to the needles.

The operation of the Model TL is slightly different. When the heel tabs are completed, ravel courses are knitted on each side. These are used when the ends of the sole are looped to the heel tabs after the stocking is completed. When the ravel courses are knitted, a loose course is made and then the transfer bar puts the instep stitches back on the needles and the foot is completed.

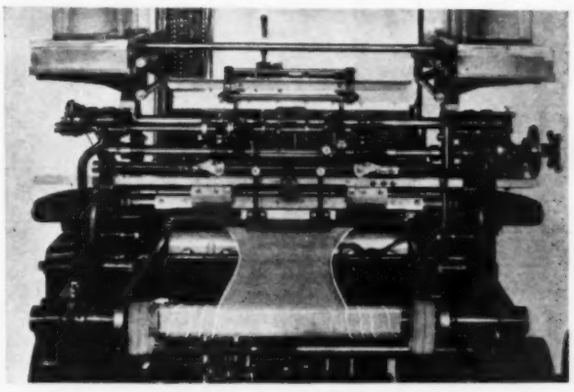
After the stocking is finished both models automatically rack back to the starting point.



Paperless Warp Beam

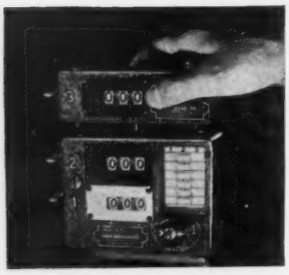
A new design of all-steel paperless warp beam for silk and rayon mills is announced by Crompton & Knowles Loom Works, Worcester, Mass. In place of the threaded heads of the previous design, a collar-locking device is now used to hold each head in place in order that there will be no threading subject to damage when the beam is banged. Furthermore, the two-piece drop-pressed metal heads are made with a trussed-bridge construction. The fact that they are hollow aids in keeping the weight down—a beam for a 56-in. loom, for example, weighing only 102 lb.

In place of the former warp slot extending along the beam, special clamps have been devised which do not weaken the beam barrel. In effect these clamps consist of metal buttons held to the bottom of cups sunk in the surface of the barrel by means of springs located inside the beam. When a new warp is to be applied, a special tool is used to pull the button outward, as shown in the photograph, and the group of warp ends is placed under it. When the button is allowed to slip back, the ends are securely held in place.



Convertible Two- and Three-Shift Pick Counter

Veeder-Root, Inc., Hartford, Conn., has announced a resetting pick counter that is actually two counters in one. The name, 2-3, is derived from the fact that the counter can be bought in two separate units as the needs of a mill owner may dictate. The principal unit is a new, two-shift, resetting pick counter complete and ready for installation. If and when the need arises, a separate third-shift unit can be bought and mounted in place on the two-



shift counter, providing a complete counter identical in every respect to a new three-shift counter installed as original equipment.

To convert the two-shift counter into a three-shift counter, it is necessary only to take out three screws, slip the extra unit in place, and replace the screws. The operation is easily and quickly done at the mill. The new counters can be mounted on any Root-type drive now in use. Other advancements in design incorporated in the new 2-3 counter, in addition to its convertible features, include: Double-acting locking mechanism with large key for ease of unlocking; figures positively aligned after resetting; positive prevention against creep of any shift when it is de-clutched; individual naval-bronze worm drives for each shift; special alloy-brass hobbed worm gears; replaceable naval-brass bearings; steel inserts for mounting; double seal.

Cloth-Doubling Device

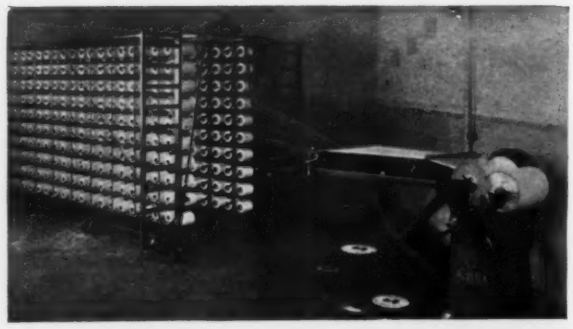
Announcement of the GA doubling and folding machine has been made recently by Hermas Machine Co., Hawthorne, N. J. This equipment is designed along the lines of the standard GA winding and measuring machine, but has a special doubling device which, of itself, can be applied to any GA machine now in use. The goods can be doubled and reeled from rolls, tubes, or in flat fold, and can be examined and measured during the operation. Where close inspection is required, the fabric first can be examined in full width running from tube to tube, and then doubled and rolled. All bars, rollers, and handles are chromium plated. The doubling device is so made that it can be instantly removed when not needed, and operation continued as a regular measuring and examining machine.

Variable-Speed Unit

Lewellen Mfg. Co., Columbus, Ind., has announced a variable-speed unit which has an extended lever between the driving motor mounting and the vertical, inclosed Lewellen transmission. On stoker drives, a power cylinder connects to the lever to provide a method for automatically varying the coal speed with variation of the demand load, and to maintain constant boiler pressure. The method of controlling speed is applicable for either automatic or manual operation by connecting the extended lever with any movable machine element. The lever may extend in any direction. It is applied to both the open- and inclosed-construction transmission and in both horizontal and vertical types. This construction permits the changing of the range of speed variation simply by resetting the stop for a new drive.

Sectional Beamer for Warp Knitting

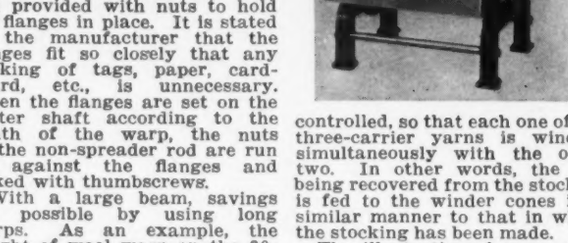
Robert Reiner, Inc., Weehawken, N. J., which has recently become American sales representative for the new Wirth high-speed tricot and milanese knitting machines described in the January, 1935, issue of TEXTILE WORLD, announces that it is now sole American agent for a new high-speed sectional beaming machine developed by Alois Schlick, of Germany. The new machine is capable of a beaming speed of 450 yd. per min. from cones and 200 to 300 yd. per min. from spools. It is compact, sturdily built, equipped with quick-acting shoe brakes, and can be operated, it is reported, by unskilled labor. A stop motion operating at the creel controls each individual thread and a red light indicates in which horizontal row of cones or spools a break occurs. The beamer is automatically stopped also when the required length has been wound.

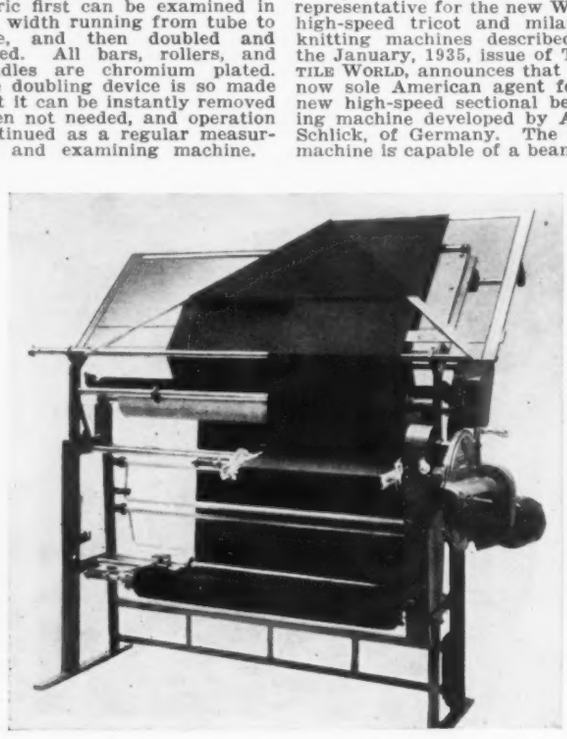


Beam for Large Warps

To withstand the strains of long, heavy, and tightly pressed warps, a new type of beam has been developed by Trautvetter Machine Works, 262 Totowa Ave., Paterson, N. J. Large-diameter warp flanges (up to 30 in. in diameter) are prevented from spreading by a non-spreader rod which runs through the barrel from end to end. The rod is threaded on both ends and provided with nuts to hold the flanges in place. It is stated by the manufacturer that the flanges fit so closely that any packing of tags, paper, cardboard, etc., is unnecessary. When the flanges are set on the center shaft according to the width of the warp, the nuts on the non-spreader rod are run up against the flanges and locked with thumbscrews.

With a large beam, savings are possible by using long warps. As an example, the weight of wool warp on the 30-in. diameter beam will run between 1,000 and 1,200 lb., according to the size of the yarn. The beams are made with the standard, 6⅝-in. diameter barrel, and are also made with 10-in. diameter barrel for use on extra-wide looms, or with very heavy weaves, where provision must be made to prevent spring in the barrel.





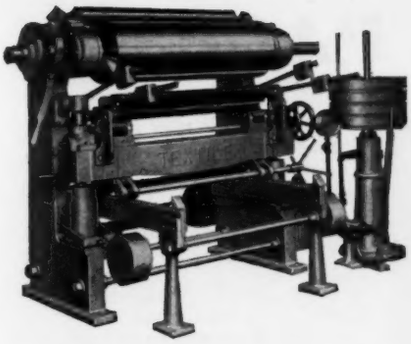
Winder for Three-Carrier Press-Offs

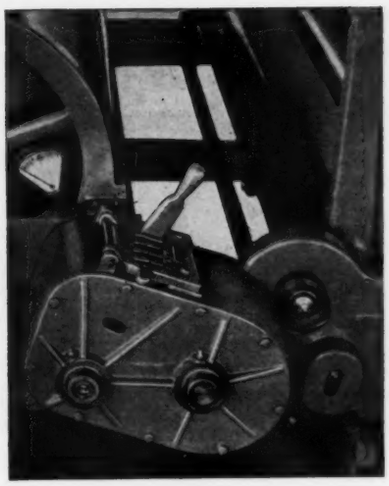
The Fidelity-Altemus Unit, a new rewinding machine designed specifically for rewinding three-carrier full-fashioned press-offs, has been placed on the market recently by Fidelity Machine Co., 3908 Frankford Ave., Philadelphia. This machine involves the operation of three spindles jointly controlled, so that each one of the three-carrier yarns is winding simultaneously with the other two. In other words, the silk being recovered from the stocking is fed to the winder cones in a similar manner to that in which the stocking has been made.

The illustration shows a self-contained single unit of three spindles. Units are available in any multiple of three spindles up to twenty-seven. Mills that have already installed these machines are said to have found it practical to use the package without further processing directly on the knitting machines for tops, heels, and toes. Altemus winders already in place in mills can be rebuilt to do this work, the best results being obtainable with the automatic builder type of machine, since there is no contact with the silk while winding.

Engraving-Proving and Sample-Printing

Textile-Finishing Machinery Co., Providence, R. I., has designed an engraving-proving and sample-printing machine





that is used for proving the engraving on copper printing rolls, and which gives a quick test of the shells before they are placed in commercial production. The machine, of course, obviates the necessity of tying up standard production equipment. Full-sized printing shells can be tried out under actual working conditions and pressure, and ease of mounting cuts down the necessary time. Another advantage is that the distribution of the hydraulic pressure on the rolls is accomplished by means of both a horizontal and vertical rack, so that the roll will be forced into engagement with the work evenly and accurately. Shells of different widths and diameters can be handled.

The machine can also be used for making samples or for trying out dyes previous to their use in commercial production.

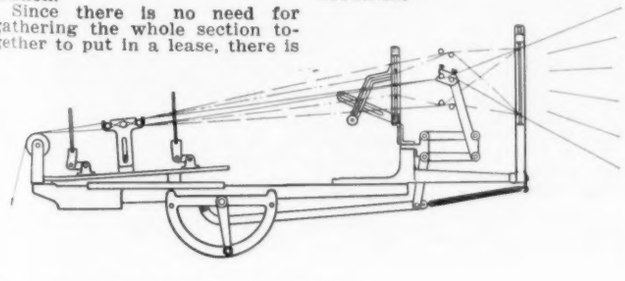
Lace Trimmer

The principle of a vertical, barber's hair clipper is employed in the lace-trimming machine developed recently by Fidelity Machine Co., 3908 Frankford Ave., Philadelphia. Two toothed knives having several cutting edges extend about ¼ in. above the surface of the table and make about 2,500 vertical oscillations per minute in opposite directions. The lace is pushed against the teeth and cut, but the blunt ends of the knives and the small space between the teeth prevent injury to the operator's fingers. Production is stated to be 100% greater than with hand scissors and medallions can be trimmed closer. The trimmer is mounted complete on a regulation, sewing-machine table top and includes an individual motor drive.

Automatic Silk-Leasing Device

Disadvantages of time and quality that attended the hand leasing of silk yarns in warping are said to be overcome by the automatic leasing device introduced by Sipp-Eastwood Corp., Paterson, N. J. To insert the leases, the operator throws a lever to the left. This opens a shed and permits a lease to be inserted. The operating lever is then thrown to the right, which opens a shed the other way, and a second lease is taken. The lever is returned to the neutral position, and the worker proceeds with the warping operation.

Since there is no need for gathering the whole section together to put in a lease, there is no spreading or separating and ringers from this cause do not occur. Cutting of the yarn by the reed is eliminated, because the ends are not gathered together, and the yarn comes up to the reed in practically a straight line. The device is said to save about 75% of the time previously required for the insertion of leases.



Gear Box for Rayon Sizer

Replacement of the old-type, cone-pulley stretch control between the quetsch and the first drying cylinder with a gear box is the latest improvement of the rayon warp sizing machine manufactured by Charles B. Johnson, Piercy & Holsman Sts., Paterson, N. J. The device is not unlike the set of transmission gears in an automobile and makes it possible to drive the quetsch at different speeds. The possibility of slippage with the old-type belt is eliminated, and it is stated that positive control of stretch is attained at all times. The gears are arranged to provide changes of stretch in multiples of 1½%, starting at 0% stretch.

By noting the gear arrangement most satisfactory for a certain sley of warp and denier of yarn, the operator can duplicate results at any future time by reference to the record of adjustment used previously.

Business News

Compton & Knowles Loom Works, Worcester, Mass., honored John F. Tinsley, vice-president and general manager, with a commemorative scroll on the completion of twenty years of service.

Van Vlaanderen Machinery Co., Paterson, N. J. Peter Van Vlaanderen, president of the company, was tendered a testimonial dinner in New York last month by members of the Textile Printing Guild. The Guild has been an effective stabilizing influence in the printing business since its formation six years ago, and the members gave Mr. Van Vlaanderen full credit for his support and council.

U S Bobbin & Shuttle Co., Lawrence, Mass., have filed plans for a new storage unit. From plans by J. G. Morrissette, 2-story steel frame and corrugated walled structure is specified, 65x150 feet.

Parks-Cramer Co., Charlotte, N. C., is constructing an addition to its plant at 2000 South Boulevard, Charlotte, which will cost about $10,000.

Hercules Powder Co., Wilmington, Del., now has control of the American patents for manufacturing cellulose acetate held by I. G. Farbenindustrie Aktiengesellschaft, Frankfurt, Germany.

Veeder-Root, Inc., Hartford, Conn. Graham H. Anthony, president of the company, has been elected president of Hartford County Manufacturers' Association.

Carolina Specialty Co. has completed arrangements for representing the Rochester Engineering & Centrifugal Corp. in the South on their lines of machinery for textile plants. Rochester Engineering & Centrifugal Corp. is a division of the American Laundry Machinery Co. and manufactures Super-Hosiery dyeing machines, hydro-extractors, silk soaking machines, sheet and pillow case finishing machines and the economy automatic folders.

John P. Maguire & Co., factors, New York, elected E. Stanley Klein vice-president. For several years Mr. Klein has been associated with Amos Parrish & Co., a merchandising and consulting agency, and he brings to his new connection intimate knowledge of selling problems.

Dinsmore Mfg. Co., Salem, Mass., is moving from 77 Lafayette Street, to 288 Derby Street, corner of Liberty Street.

Gaco Corp., East Greenwich, R. I., has recently enlarged its manufacturing facilities to include production of a complete line of straight wound cloth tubes.

Draper Corp., Hopedale, Mass., has awarded contract to John Bathelt Construction Co., Holyoke, Mass., for extensions and improvements in foundry. F. P. Sheldon & Son, Providence, R. I., are engineers.

Technical Advertisers Association of Boston held a luncheon and meeting in Boston June 30, attended by 143 members and guests. Speakers were James T. Chirurg of James Thomas Chirurg Co., Prof. Robert F. Elder of M.I.T., F. H. Willard, president of Graton & Knight, Wallace L. Pond of Nicholson File Co., C. J. Stark of Penton Publishing Co., and H. R. MacNamee of Richardson, Alley & Richards Co.

L. E. Wooten, Charlotte, N. C,. has been appointed southern representative for **Knowlton & Newton Co., Inc.,** Lowell, Mass., manufacturers of return-air condensers for picker and napper rooms, dust-collecting systems, dry-can machinery, color kettles, etc. Mr. Wooten will retain his connection with Lestershire Spool & Mfg. Co., T. C. Entwistle Co., Mitchell-Bissell Co., and others.

Dave Jones has been appointed to represent **Atlanta Harness & Reed Co.,** Atlanta, Ga., in North and South Carolina and Virginia, with headquarters at

New Publications

Basic Industrial Markets in the United States: The Textile Industries, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, Washington, D. C.; price 10c.

This is the first of a series of studies under preparation by the Marketing Research Division of the Bureau of Foreign and Domestic Commerce, designed to offer industrial marketing executives a quick and accurate picture of the size and location of those sections of their market represented by a specific industry—in the case of the first study, the textile industry.

The report in question covers the location of approximately 98% of the textile industries of the country. These are taken up, first as a combined group, and then by branches: cotton, woolen and worsted, rayon and silk (spinning), rayon and silk (weaving), knitting, with appendix giving rayon and synthetic fiber production capacity. For each of the above groupings, there are three main features: a summary, a map showing geographic distribution graphically, and a detailed table giving the State and County.

In a preface to the report, Edward T. Pickard, chief of the Textile Division of the Department of Commerce, states: "Those who sell supplies or equipment to textile mills will be well repaid for the time spent in examining this document and the accompanying tables and maps. Only by critical analysis of all the factors involved in organized marketing can intelligent decisions of a sort to effect real economies be made. The study under discussion will be, I am confident, a material aid in obtaining this objective."

It is pointed out in the introduction that one of the problems constantly harrassing industrial marketing executives is the inability to get an accurate, visual picture of their markets. It is this reviewer's opinion that the report in question helps in the solution of this problem for those who sell to textile mills—and should aid materially in imparting a scientific approach.

Fabrics, by Grace G. Denny; J. B. Lippincott, Philadelphia; $2.50.

This is the fourth edition, revised and reset, of a book which was originally entitled "Fabrics and How to Know Them." We always liked that title and felt it must have good sales appeal; but, anyway, the purpose of the book is still the same—to provide a glossary of those fabrics which are sold as yard goods at retail. While many technicians will want to quarrel bitterly with the author over details of her definitions, and her work cannot be considered by any means a standard glossary for the textile industry, it does present, on the whole, a useful, convenient, and readily understood medium of reference for the countless retailers and consumers who lack a technical knowledge of these materials. As in past editions, the book contains a chapter on textile testing, another on labeling, and a classification of fabrics.

THE PERSONAL PAGE

J. H. Davenport, for the last ten years general manager of Davenport Hosiery Mills, Chattanooga, Tenn., has been elected president to succeed the late R. B. Davenport. **J. Tally Johnson,** superintendent, and **Kenneth Durham,** sales manager, were each given the title of vice-president at a recent meeting of the board. **G. T. Hunter** was added to the board of directors.

Samuel Kramer has resigned as president and director of Kramer Silk Corp., New York, with which he has been associated since its organization several months ago.

Frank Arnall has been named president of Arnco Mills, Newnan, Ga., succeeding the late Alton W. Arnall, it recently was announced. Other officers are **R. D. Cole,** chairman of the board, **Bryan Blackburn,** vice-president and treasurer, **Raleigh Arnall,** assistant treasurer, **T. A. Caston,** general manager, and **A. E. Flemming,** secretary.

Frederick D. Corley, first vice-president and general manager of the retail store of Marshall Field & Co., was elected president of the corporation on June 29, succeeding **John McKinlay,** who recently resigned but will continue on the board.

Louis Lowinson, of Lowinson & Hussey, New York, has been elected president of Textile Brokers Association, succeeding **George I. Seidman,** of Heineman & Seidman.

John E. Rousmaniere has resigned as assistant to the president of Southeastern Cottons, Inc., New York.

J. Frank Wilson, president of the Virginia Manufacturers' Association and for a number of years manager of the two mills at Fieldale of the Caroline Cotton & Woolen Mills, a division of Marshall Field & Co., has become manager of the other two plants of the company in Virginia, the Athena and Puritan Mills, Roanoke, Va.

R. E. Henry, president of Dunean Mills, Greenville, S. C., and **T. M. Marchant,** president of Victor-Monaghan Co., Greenville, were elected directors of the Textile Hall Corp., Greenville, last month. **Cartter Lupton,** formerly president of Dixie Mercerizing Co., Chattanooga, Tenn., resigned his directorship. Officers re-elected included **W. G. Sirrine,** president and treasurer, **John A. McPherson,** vice-president, and **Bertha M. Green,** secretary.

F. Gordon Cobb, former vice-president and general manager of the Lancaster (S. C.) Cotton Mills, now the Springs Cotton Mills, who for some time has been executive vice-president of Pomona Mfg. Co., Greensboro, N. C., has resigned to look after his extensive property holdings in Charlotte. Mr. Cobb took charge of the Pomona Mfg. Co., with the understanding that he would retire as soon as he had placed the plant on a paying basis, which he did within a few months. **W. T. Clement,** who had been superintendent of the plant, was promoted to manager, and **H. W. Whatley,** for several years superintendent of Carl Stohn, Inc., Charlotte, was made superintendent.

Samuel Rottenberg has severed his connection with the French-American Angora Co., New York, and **Stanley R. Stager** has been elected treasurer and will have full charge of selling the company's output. The company has yarn manufacturing facilities in Philadelphia, Pa., and office at 207 Fourth Ave., New York.

"Chip" Robert

P. J. Wood

L. W. (Chip) Robert, of Atlanta, head of the engineering firm of Robert & Co., was elected secretary of the Democratic National Committee, at the recent Philadelphia Democratic Convention, succeeding **W. Forbes Morgan,** of Washington, was appointed treasurer of the committee.

Dr. F. Bonnet of Viscose Co., New York, spoke before the June meeting of the American Association of Textile Technologists.

Howard E. Coffin, chairman of the board of Southeastern Cottons, Inc., has been made chairman of the board of Young Management Corp., an investment advisory organization.

L. G. Hardman, president of Harmony Grove Mills, Commerce, Ga., recently made a gift of $10,000 to Mercer University, Macon, Ga., the fund to be used to improve the library which will be named in honor of his mother.

K. Hirano has been made president of Gunze Raw Silk Mfg. Co., Ltd., succeeding **S. Endo,** who died recently in Tokyo.

D. H. Hill, Jr., associate editor of *Textile Bulletin,* last month concluded a service of 25 years with that publication. In recognition of this service he was presented with a wrist watch suitably inscribed.

C. Vanderhooven, secretary of American Enka Corp., Enka, N. C., has been named to represent the rayon industry on a committee to work with a similar group from the railroads to "discuss specific steps that can be taken for the mutual advancement of industry and that mode of transportation represented by the railroads."

Textile Calendar

American Society of Mechanical Engineers, annual meeting, New York, Nov. 30 to Dec. 4, 1936.

National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, Nov. 30 to Dec. 5; also annual meeting of American Society of Mechanical Engineers.

American Association of Textile Chemists & Colorists, annual meeting, Providence, R. I., Dec. 4 and 5, 1936.

Twelfth Southern Textile Exposition, Textile Hall, Greenville, S. C., April 5 to 10, 1937.

P. J. Wood is now connected with the Stonecutter Mills Co., Spindale, N. C., where he will be head of the dyeing and finishing department of the company, which is scheduled to be ready for operations by Sept. 1. Mr. Wood was formerly manager of Apex-Oriental Corp., Paterson, N. J., and a past president of the American Association of Textile Chemists & Colorists.

R. C. Kramer, president of Belding Heminway Co., has been elected a member of the board of directors of Gimbel Bros., retailers, it is announced.

J. Y. ("Jack") Wilkins, vice-president and treasurer of Goldstein Wilkins Corp., joined L. & E. Stirn, Inc., New York, on July 1 in an executive merchandising styling and sales capacity. Goldstein Wilkins Corp. is being dissolved and the entire dress fabric stock of that company will be transferred to L. & E. Stirn, Inc. **Sidney Goldstein,** president of Goldstein Wilkins Corp., has not yet announced his plans for the future.

S. G. Taylor has been named new sales representative of the Wamsutta Mills of New Bedford, Mass., to cover the New England territory. Mr. Taylor has been a member of the Wamsutta Mill organization for a number of years, and has started his new duties.

Rufus E. Bowland, Old Hickory, Tenn., du Pont Co. official, has been awarded the 25-year service pin, which is ornamented with four diamonds. He has served with several plants of the company. He is the second at the Old Hickory plant to receive the 25-year pin, the other being **James T. Cook,** who has been transferred to another plant of the company.

John Hoye, whose series of articles in TEXTILE WORLD on staple cotton fabrics is creating wide interest, has recently joined the staff of Iselin-Jefferson Co., New York, where he will develop new cloths as well as act in a sales capacity.

G. W. Howland has been elected president of Northeastern Mills Corp., New York, which will act as selling agent for a group of rayon and silk mills.

H. D. Hammett has rejoined the New York office staff of the Standard Bleachery & Printing Co., Carlton Hill, N. J., after service with other companies in the same field.

Harold A. Smith for the last 14 years with Convertex Co., has joined Federated Textiles, Inc., New York.

John T. McManus has joined the Lonsdale Co. as controller of the Lincoln Bleachery & Dye Works, Lonsdale, R. I. Mr. McManus has been with S. Slater & Sons, Webster, Mass., for 30 years in various capacities.

Wm. P. Jacobs, secretary of the Cotton Manufacturers Association of South Carolina and president of Presbyterian College, Clinton, S. C., recently shot a 136-yd. hole-in-one on the course of the Lakeside Country Club between Clinton and Laurens, S. C.

W. H. Gibson, Jr., has resigned as general superintendent of Mansfield Mills, Inc., and Jennings Cotton Mill, Lumberton, N. C.

Fred L. Heyes, formerly general manager and superintendent of Pisgah Mills, Inc., Brevard, N. C., has been made superintendent of Spencer Mills, Inc., Spindale, N. C.

W. J. Duggan, for the last several years superintendent of Spencer Mills, Inc., Spindale, N. C., and prior to that time with Chadwick-Hoskins Co., Charlotte, N. C., has accepted a position in the merchandise development division of Sears Roebuck & Co., Chicago.

O. G. Morehead, superintendent of Santee Mills, Bamberg, S. C., has resigned to become general superintendent of Mansfield Mills, Inc., and Jennings Cotton Mill, Lumberton, N. C.

William H. Caldwell, agent of Jackson Mills of Nashua (N. H.) Mfg. Co., has retired. His place will not be filled.

L. M. Carpenter, general manager, Drayton Cotton Mills, Spartanburg, S. C,. has resigned.

R. W. Sterling, for twenty years general superintendent of Kilburn Mills, New Bedford, Mass., and associated with that corporation for 30 years, has been appointed superintendent of the cotton-yarn division of Farr Alpaca Co. in Holyoke, Mass.

George N. Miller has been made superintendent of plant maintenance and power production at Riverside & Dan River Cotton Mills, Inc., a new post created to tie-in the supervision of physical plant and machinery under one man. He went with the company seventeen years ago as civil engineer.

John F. Reardon, Jr., will remain as general superintendent of the Grosvenordale Co. mills, North Grosvenordale, Conn., having withdrawn his resignation which was to become effective June 19. He is a son of the late John F. Reardon, agent of the company until his death in November, 1933, and has been connected with the company since 1919.

Louis F. Wilding has been appointed wool buyer of the National Worsted Mills, Inc., Jamestown, N. Y. For the last 20 years he has been superintendent of the Bradford Mills of the American Woolen Co., Louisville, Ky.

George J. Greendonner, formerly superintendent and designer for the Valley Woolen Co., Marlboro, N. H., has joined Middlebrook Mills, Bound Brook, N. J.

Arthur C. Varnum has been named superintendent of American Woolen Co.'s Pioneer Mill, Pittsfield, Me.

R. M. Sharpe, acting receiver and manager of the Bridgewater, Vt., Woolen Mill, has been appointed general manager of the Harris Emery Mills, Penacook, N. H.

Harold P. Southerland, for the last five years general foreman of the throwing department of the Adams-Millis Corp., manufacturers of hosiery, Kernersville and High Point, N. C., has left that post to become manager of the new throwing plant of the Joy Silk Mills, at Hartsville, S. C. Associated with him is **F. C. Gilbert.**

J. E. Murray, formerly superintendent of Camden (Me.) Woolen Co., now holds a similar position with Saybrook Mfg. Co., Hope Valley, R. I.

Walter T. Jenkins has been appointed assistant manager of Rock Hill (S. C.) Printing & Finishing Co., a newly created post. He was formerly plant engineer at the bleachery. **J. A. Aycock,** who has been Mr. Jenkins' assistant, has been appointed to succeed him.

C. W. Byrd has assumed his new duties as secretary-treasurer of the Davidson (N. C.) Cotton Mills. He formerly held a similar position with the Locke Cotton Mills, Concord, N. C.

G. Lawson Ivie, who has been connected with the Carolina Cotton & Woolen Mills Co. for the last 20 years, has been promoted to the position of merchandise manager of the entire domestic line of products of Marshall Field & Co., with headquarters in the New York office.

F. W. Phillips has been appointed sales representative of Premier Silk Mills, Inc., High Point, N. C., recently organized to take over the Marshall Field & Co. plant.

Frederick J. Baumann has been appointed credit manager for Celanese Corp. of America, Inc., succeeding **Guy A. Cowley,** who has resigned.

Albert Bosshard, for the last 40 years with Stehli Silks Corp., New York, retired from that firm early in May. Mr. Bosshard was raw silk buyer for Stehli for many years. **Paul Bosshard,** his son, has succeeded him in that post.

Charles L. Harding, Jr., for many years connected with Harding, Tilton Co., Inc., Boston, has become associated with Meinhard, Greef & Co.

George L. Storm has joined Viscose Co., New York, in a sales capacity.

William D. Jamison, of Jamison Textile & Commission Co., New York, won the low gross at the Arkwright Club golf tournament.

Jacques Cipoth has rejoined Susquehanna Silk Mills, New York, as stylist of fabrics for the dress trade.

James Melfi, recently in the gray goods brokerage business under his own name and previous to that with Cheney Bros. in the gray goods department, has joined T. B. Hill Co., Inc., textile brokers, in a selling capacity.

H. R. Pettigrove, of Marysville, N. B., formerly on the staff of Gibson mill at Marysville, a link in Canadian Cottons, Ltd., chain, was recently appointed fair wage officer for the province of New Brunswick.

Malcolm Richardson, class of 1926, has been elected president of New Bedford Textile School Alumni.

Ralph R. Carson, was recently chosen as a member of the board of directors of Guelph Carpet & Worsted Spinning Mills, Ltd., Guelph, Ont.

W. R. Odell, treasurer and general manager of the Kerr Bleaching & Finishing Works, Inc., of Concord, was recently dined by the board of stewards of the Forest Hill Methodist Church, of which he is chairman, in celebration of his 81st birthday.

L. E. Cromer, for several years cotton classer at Lonsdale Co., Seneca, S. C., has been made purchasing agent of Greenwood (S. C.) Cotton Mill.

S. D. Wilson has resigned as managing superintendent of Hayward Woolen Co., East Douglas, Mass.

H. J. Pollack is now general manager of the Olga Knitting Mills, Watertown, N. Y.

George E. Glenn, Jr., assistant superintendent of the Lindale, Ga., plant of the Pepperell Mfg. Co., has been promoted to superintendent.

B. R. Burnham, superintendent of Pelzer (S. C.) Mfg. Co., Mill No. 4, has tendered his resignation.

H. B. Robinson, assistant superintendent of the Columbus (Ga.) Mfg. Co., has been promoted to superintendent, succeeding **George W. Murphy,** who resigned.

F. C. Nicholson has been appointed superintendent of the newly organized Lincoln Knitting Mills, Lincolnton, N. C., of which **F. H. Chamberlain, Jr.,** is president and treasurer.

John A. Baugh, Jr., formerly general manager of the former Loray, N. C., plant of the Manville Jenckes Corp., is now associated with Walker Engineering Co., Inc. Gastonia, N. C., in their sales division.

Obituary

George W. Ragan, aged 89, who helped organize Gastonia Mfg. Co., the first textile mill in Gastonia, died at his home in that city on June 9. At the time of his death he was president and treasurer of Ragan Spinning Co., Gastonia, N. C.

H. G. Wood, aged 68, president of Edenton (N. C.) Cotton Mills and identified with several other business enterprises, died recently.

Thomas A. Lacross, aged 53, president of Hill & Lacross Mfg. Co., East Greenwich, R. I., died at his home in Edgewood, R. I., on June 4.

John Zimmermann, aged 80, retired vice-president and general manager of Artloom Corp., Philadelphia, died on May 23.

M. L. Marchant, aged 67, died last month at his home in Greenville, S. C. Mr. Marchant, for many years a cotton merchant in South Carolina, was a brother of T. M. Marchant, president of Victor Monaghan Co., Greenville.

George S. Merriam, aged 64, assistant manager of Shawsheen, Mass., warehouse of American Woolen Co., died at Reading, Mass., on June 23.

Thomas H. Johnson, superintendent of Durham (N. C.) Hosiery Mill No. 6, died recently.

Oscar Andrew Reaves, aged 62, superintendent of Apalache Mills, Spartanburg, S. C., died at his home there June 2.

Troy Sherrill, aged 32, superintendent of Cannon Mills plant at Rockwell, N. C., was killed June 16 in an automobile accident.

Col. George Fabyan, aged 69, formerly resident partner in Chicago for Bliss Fabyan & Co., died in Chicago on May 18.

Jacques H. Tracy, aged 51, partner in Tracy, Lyons & Co., New York, died on April 24.

John G. Whitaker, aged 71, resident manager of Lincoln Bleachery & Dye Works, Lonsdale, R. I., until his retirement three years ago, died on May 12.

Samuel D. Bush, aged 87, retired head of S. D. Bush Co., cotton brokers, Boston, died on May 10 while en route from Camden, S. C., to Boston.

Benjamin A. Cadman, who worked 54 years for Cheney Bros. Co., Manchester, Conn., most of that time as overseer in the warping department, retiring a few years ago, died June 14.

Shelby S. Fletcher, head of Fletcher Mills, Inc., Huntsville, Ala., died June 27 following a heart attack.

TEXTILE WORLD'S

Cotton Digest

THE recent announcement of the addition of new members to the Cotton-Textile Institute representing a total of 320,000 spindles was significant. Coming in as they did during a period when practically no new resignations were being received, these new memberships meant that the Institute had come to the bottom of the post-NRA decline and had started upward again.

It is certainly no secret that all associations took it on the chin when NRA folded up. Chronic non-cooperators who had joined to get "under cover" promptly pulled out. The fact that the Institute's present membership (representing 18,800,000 spindles in place) is almost equal to the top* reached in pre-code days shows that the industry as a whole is convinced of the need for such an organization, code or no code. It reveals an appreciation of the fundamental services built up during the 10 years of its existence.

In addition, the industry has recently received an important "plus" value from the Institute—the millions of dollars saved by its presentation of facts in connection with the windfall tax provisions of the new revenue act. This saving has undoubtedly been an added factor in the Institute's recovery from the post-NRA decline.—*Editor.*

*In fact, in relation to total spindleage, the present membership is above that "top," which was reached in 1927 when 21,000,000 spindles were represented out of 36 million spindles in place. Today's membership, in percentage of total spindles (about 28,000,000) is considerably higher.

New Cotton Found of Superior Quality

The surprising fact that fineness of cotton fiber is more important to the strength and wearing quality of yarn and fabric than is length of fiber has been determined by Dr. R. W. Webb, of the U. S. Dept. of Agriculture, through special spinning tests. As a result, cotton breeders of the Bureau of Plant Industry are producing some promising results in experiments conducted on an almost-forgotten American cotton known as "Hopi," which is grown by Hopi Indians in northeastern Arizona. This cotton has few qualities to commend it beyond its remarkable fineness and and resulting silkiness and has a very low yield; but, when it is crossed with Acala, the result is an excellent staple having good uniformity. Yarn from 1⅛-in. Hopi-Acala is estimated to be as strong as yarn from 1½-in. ordinary Upland. It will spin to finer numbers than Upland and requires less twist than other fibers of equal length. It is prophesied that when this new fine, silky fiber is produced in commercial quantities, it will prove a boon to the mills and will very materially aid the farmer in meeting foreign competition.

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Markets Continue To Strengthen

Instead of the usual seasonal slump, the gray cloth market opened strong with increasing sales in nearly every line. Print cloths sold well in excess of production almost the entire period, and prices advanced from ⅛ to ¼c. Increased interest was noted in combed broadcloths. Large quantities of narrow and wide sheetings moved, with increases in price. Lack of suitable cotton further pushed prices and volume, and much of the trade bought well into July and August fearing (1) actual shortage and (2) higher prices. There were advances in combed lawns, voiles and dimities. Denims sold higher. As the month closed, there was a scarcity of some standard prints for spot shipment. Industrials were picking up and the demand for finished goods was improving. Many observers think this is the nearest thing to a "real" market the trade has seen in a long time.

The cotton yarn market strengthened sharply during the month, improvement appearing to be founded on a sound basis—in part due to higher cotton prices but chiefly reflecting the need for additional yarn for manufacturing purposes. Some yarn mills found it difficult to secure suitable cotton. Yarn prices advanced somewhat faster than raw material but are still very low. Certain 2-ply warps of ordinary quality were selling about the middle of June for 26 to 26½c., as compared with 24c. a month earlier. Some spinners are so worried over the present cotton shortage and the possibility of a price increase that they are refusing to accept any business for the last quarter of the year. At the beginning of July spinners reported exceptionally heavy June volume. Mid-month tone is very firm.

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Japanese Import Figures

Approximately two-thirds of the Japanese cloth imported into this country during the first quarter of the year represented withdrawals from bonded warehouses, it recently was disclosed by Department of Commerce figures. Total Japanese imports for consumption during this period were 21,530,000 sq.yd. valued at $958,000, as compared with 12,772,000 sq.yd. valued at $642,000 in the same period for 1935.

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Prices and Activity

Key cotton prices of July 1 and a month ago contrasted with those of the last two years follow:

	July 1 1936	June 1 1936	July 1 1935	July 2 1934
Spot Cotton, N. Y.	12.50	11.79	12.15	12.10
Ditto, high previous month	12.49	11.77	12.20	12.45
Ditto, low previous month	11.77	11.61	11.50	11.80
10s hosiery cones	23½	22½	26½	27
10s/2 carded skeins	24	22½	27½	27
20s/2 carded peeler warps	26½	24½	30½	30½
60s/2 combed peeler warps	55	50	55	57½
60s/2 mercerized cones	66	64	70	69
37 in., 3-yd. drill	8 3/8	8	9	9½
38½-in. 64x60s	5½	5¼	6	6½
36-in. 4-yd. 56x60s	6 7/8	6¼	7½	7½
Denim, 2.20s	13	13	14½	15½

Statistics of particular interest to cotton manufacturers showing May operations and the raw material situation:

Spindle activity .....105.2% capacity, or 6,893,604,077 spindle hours
Cotton consumed .....530,799 bales
Cotton exported .....351,734 bales
Cotton imported ..... 19,891 bales

April operations for comparison:

Spindle activity .....110.9% capacity, or 7,320,181,265 spindle hours
Cotton consumed .....576,762 bales
Cotton exported .....352,710 bales
Cotton imported ..... 12,629 bales

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Revere Sees Good Cotton Prospects

A hopeful picture of the raw cotton situation for the balance of the year was presented by C. T. Revere, of Munds, Winslow & Potter, speaking before the monthly luncheon of the Textile Square Club, of New York. He said that he sees no reason for concern with regard to the September development, when the new crop would be coming in and when the hedges would be thrown on the market. Touching on one of the most delicate phases of the situation, Mr. Revere said that the hedges are not likely to weigh heavily on the market if the present heavy consumption of cotton continues, and if Government holdings are not touched for the next six months. The mills have no alternative but to take what part of the new crop is available.

He stressed that the present (latter part of June) price of cotton has been brought about by the mills, consumers and public without Government control or influence, and that we are nearer a free market than we have been for a long time.

Giving a detailed analysis of his views for a possible 1936 yield, Mr. Revere said that he expects from 11,750,000 to 13,000,000 bales, dependent on weather conditions. He is not worried about the market even if the maximum figure is produced.

There is no doubt that a number of mills are being pinched at this time for lack of cotton, particularly those plants which have been depending on hand-to-mouth buying as needed during recent months. In fact, several plants have reported to TEXTILE WORLD that they have been forced off certain constructions because of inability to secure proper grades and staple.

Industry Briefs

Boger City is the new name of the postal sub-station at Lincolnton, N. C., now known as Goodsonville, as the result of petitions signed by a large number of residents of that section which were granted July 1 by the Post Office Department at Washington. This is in honor of Robert C. Boger, president of Boger & Crawford Spinning Mills, of that place. This company now has under construction a new 20,000-spindle unit.

Simplified Practice Recommendation, R27, *Cotton Duck,* which specifies standard numbers and widths of sail and wide duck, is now being revised to include more widths. Copies of proposed revision may be obtained gratis from National Bureau of Standards, Washington, D. C.

Lamport Seeks New Outlets—Samuel C. Lamport, president of Lamport Mfg. Supply Co., will sail for Europe shortly to study possible new markets in Russia and Central Europe for billions of yards of cotton goods, it was announced July 5. It was stated that Mr. Lamport was making the trip at the suggestion of President Roosevelt and other officers of the Administration.

Plan Cotton Release—With the shortage of spot cotton growing acute, the Commodity Credit Corp. made known July 1 that it would release additional fiber held under the 1936 loan at 12½c. per lb. on the 12c. loan and 11½c. per lb. on the 11c. loan.

An explanation by Frederick Dumaine, treasurer of the Amoskeag Mfg. Co., of his statement that $11,000,000 was needed to stabilize the company was the highlight of the closing session of the bondholders meeting in Manchester, N. H., July 2. Following Mr. Dumaine, Arthur Black, of Boston, special master in the 77-B proceedings of Amoskeag testified that $2,500,000 is needed to renovate and rearrange the plant and make necessary improvements and that $11,000,000 must be held as quick assets to insure successful operations. The hearing reached a dramatic point when Mr. Dumaine stated bluntly that the "management is ready to step out and let you in New Hampshire take over operations." It was said recently that Amoskeag has quick assets of $9,000,000.

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Cotton Mill News

Dwight Mfg. Co., Alabama City, Ala., has closed bids on general contract for new one and two-story mill addition, 80x280 ft., estimated to cost over $100,000, with equipment. It is expected to begin erection in July. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Swift Mfg. Co., Columbus, Ga. has let contract to A. K. Adams Co., Atlanta, for a 72x121 ft. brick and concrete addition, costing $10,000. The structure will be three stories high.

Highland Mills, Griffin, Ga., are replacing their older looms with new Draper looms.

Pacolet Mfg. Co., Plant No. 4, New Holland, Ga., has completed the work of repairing the plant damaged by the tornado of April 6, which represented more than $750,000.

Strickland Cotton Mills, Valdosta, Ga., has completed installation of 45 Saco-Lowell spinning frames and two Saco-Lowell slubbers. An additional slasher is being installed, and three more slubbers will go in soon.

Nonquitt Mill, New Bedford, Mass., has added 50 automatic looms, giving a total of 300 looms.

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Johnston Mills Co., Charlotte, N. C., has completed an addition 100x163 ft., costing about $50,000. New machinery is being installed.

Cliffside (N. C.) Mills have completed a number of improvements including the discarding of the belt-drive system for individual motor drive, installing long-draft spinning, and automatic cleaners.

Trenton Cotton Mills, Gastonia, N. C., have completed a brick addition to the plant.

Carolina Webbing Co., Greensboro, N. C., recently incorporated to manufacture cotton and other types of elastic webbing, should be ready for operation by fall. Contracts call for a one-story, brick-and-steel building containing 12,000 sq.ft. floor space. Machinery has already been purchased. John K. Voehringer, Jr., president of the new enterprise, is well known as a manufacturer of full-fashioned hosiery. Warren H. Cooke, formerly superintendent of Southern Webbing Mills, Greensboro, N. C., will superintend operations as vice-president. A. Margerison, formerly with Martex Towel Mills, Philadelphia, is treasurer.

Revolution Cotton Mills, Greensboro, N. C., has purchased 27,000 bobbin holders from the Eclipse Textile Devices Co. of Elmira, N. Y.

Boger & Crawford Spinning Mills, Lincolnton, N. C., have begun construction of new two-story addition to local mill, about 75x400 ft., to be known as Unit No. 4. It will have facilities for installation of about 20,000 spindles, with initial allotment of 12,000 spindles.

Union Mills Co., Monroe, N. C., completing a changeover of 34 spinning frames to H. & B. American long draft. The 22 combers in use will be replaced with the same number of new Nasmith machines. The old mill is being reroofed. All houses in the village are being painted and recovered.

Norwood (N. C.) **Mfg. Co.,** has installed the Breton Mineral Process on the latest Saco-Lowell one-process system of picking.

Duchess Fabrics Corp., Statesville, N. C., has begun construction of new one-story mill addition, 50x80 ft. Company will soon begin erection of a group of 20 dwellings for employes at the plant.

Ranlo Mfg. Co., Worth, N. C., plant, is installing additional automatic looms. Other mechanical changes are also being made.

Firestone Cotton Mills, Akron, Ohio, have shipped about 15,000 spindles to Canada, taken from branch mill of company at Fall River, Mass., recently sold, and will use with other equipment in a Canadian branch mill.

Springs Cotton Mills, Gayle plant at Chester, S. C., recently completed an addition 125x50 ft. This department is being used to house the Barber Colman warper and about 200 looms. The addition cost about $20,000.

Clifton (S. C.) **Mfg. Co.** and the **Laurens** (S. C.) **Cotton Mills** are having its automatic spoolers equipped with a vacuum lint and dust collector by The Textile Shop, Spartanburg, S. C.

Pacific Mills, Lyman, S. C., is planning an $80,000 expansion project, to consist largely of a three-story concrete building similar in design to the ones now in use. It will provide additional storage and manufacturing space.

Union Wadding Co., Pawtucket, R. I., has awarded a general contract to the A. F. Smiley Construction Co., Pawtucket, for a 3-story storage unit 85x100 feet. J. E. Cox Co., Inc., Fall River, Mass., has the structural steel contract.

Lorraine Mills, Inc., Sweetwater, Tenn., housed in the old Cagle flour mill building, which was renovated for this concern, has begun operations with about 75 operatives on the payroll.

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Cotton Financial Notes

Athens (Ala.) **Yarn Mills, Inc.,** has been sold at public auction, a total of $15,000 being realized. The machinery was sold piecemeal to a number of buyers.

Quinnebaug Mills, Danielson, Conn., owned by the Wauregan-Quinnebaug Mills, Inc., is being offered for sale.

Connecticut Cordage Co., Danielson, Conn., has acquired from James F. and James E. McWilliams the woolen blanket mill property at North Oxford, Mass., as a part of anticipated expansion.

Nashua (N. H.) **Mfg. Co.,** has disposed of a group of 111 dwellings and land, formerly used for employes at the mill, at public auction, with gross bids totaling $262,900.

W. L. Balthis, head of the cotton firm of W. L. Balthis & Co., Gastonia, N. C., and associates, have bought the Lowell (N. C.) plants of United Spinners, Inc., and the Peerless Spinning Co. The plants will be operated under the names of United Spinners Corp., Peerless Spinning Corp. and Insulating Yarns, Inc.

Caswell Cotton Mills, Kinston, N. C., has been ordered resold at recommendation of the trustees. Bondholders offered $85,000 for the mill property at the sale April 27. Resale has been called for 11 A.M., July 20, at the mill site.

Morgan Cotton Mills, Laurel Hill, N. C., have plans under way for early resumption of operations at branch mill at Quitman, Ga., idle for some time past.

National Cotton Mills, Lumberton, N. C., was auctioned for the third time late last month, the bid this time being $28,100 by E. M. Johnson, trustee. Previous bids were $21,500 and $26,700.

Hart Cotton Mills and **Fountain Cotton Mills,** Tarboro, N. C., have merged as the **Hart Cotton Mills.** John H. Rogers is president, John P. Youngblood, vice-president and Robert J. Walker, vice-president. Weaving will be concentrated in new addition to the Hart plant.

Clinton (S. C.) **Cotton Mills** have been authorized by stockholders to borrow $1,500,000 from the government, in order to further the purchase of Pelzer Mfg. Co., it is said.

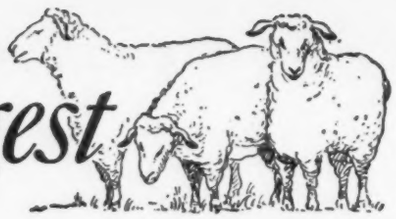
Pawtucket, R. I.—The City Council has appropriated $55,000 to buy an idle mill to be run by an industrial commission for benefit of unemployed. Textiles for state institutions will be made. The former Manville-Jenckes plant may be bought.

Jaffee Cotton Products Mfg. Co., Dallas, Tex., recently organized with capital of $30,000, plans operation of a local cotton mill. Company is headed by Jesse and Julius Jaffee, both of Dallas.

Texas Textile Mills, Dallas, Tex., have met acceptance of their amended 77B reorganization plan. The Dallas, Fort Worth and Kansas City properties will be sold and modernization undertaken at the McKinney and Waco plants.

TEXTILE WORLD'S

Wool Digest



LEWIS A. HIRD, chairman of the executive committee of the National Association of Wool Manufacturers, has made a strong case in connection with labeling practices in that industry, with particular reference to the growing use of spun rayon mixtures.

He points out that, now that the wool textile industry has provided standards for labeling of wool and part-wool fabrics and it is possible for retailers and garment manufacturers to ascertain the exact facts as to the wool content of such fabrics, it is difficult to see how either the retailers or garment manufacturers can fail to support proposals for compulsory labeling of wool and part-wool garments.

The important thing to remember is that such a proposal is neither directly nor indirectly a reflection on the fibers which are substituted for wool. It merely means that, in this age of combination fabrics, the consumer is entitled to know what he is getting.

It is true, of course, that the admixture of a small percentage of spun rayon to a wool fabric does not change the fundamental characteristics of that fabric; furthermore, it may add attractiveness, enhancing the value. The point is, however, that as the percentage is increased, the fundamental characteristics of the fabric *are* changed. A fabric containing 75% cotton or rayon and 25% wool, for example, is far different from one containing 75% wool and 25% cotton or rayon. Obviously, therefore, the only real protection for a consumer is a label guaranteeing a minimum wool fiber content.—*Editor.*

Union Threatens Wool Goods Industry

Steps toward enforcing demands for a 20% wage increase, a 35-hour work week, abolition of third shift, recognition of the union, etc., in the woolen and worsted industry throughout the country were taken on July 1, when a general strike committee, which includes national officers of the United Textile Workers and the Woolen and Worsted Federation, forwarded demands to Arthur S. Besse, president of National Association of Wool Manufacturers. Six organizers were sent to Lawrence, Mass., to concentrate on the plants of the American Woolen Co.

Thomas F. McMahon, president of the U. T. W., said that to facilitate the campaign the union has divided the industry into five districts. No. 1 will include Massachusetts, Connecticut and Rhode Island and will be in charge of Horace A. Riviere, vice-president of the U. T. W. No. 2 will comprise New York, Vermont, Maine and New Hampshire; 3. includes New Jersey, Pennsylvania, Maryland, Virginia and West Virginia. Southern States will make up District 4. and District 5 will include Western States.

These war-like plans have had scant effect on the wool goods market so far as can be seen at present in the attitude of buyers or in the conversation of sellers.

Wool Goods Trade Moderately Active

Demand for wool goods has been moderately active, and prices became strong as June advanced. Late in the month buyers were unable to obtain the prices quoted a while back on special lots of goods, and mills, faced with steady wool and yarn values, were not disposed to grant concession even where large orders were proffered. Machinery activity showed some increase over that reported for April and May, as mills started up spindles and looms on the production of women's wear coatings and suitings.

Unfilled orders were estimated at slightly below 40,000,000 yd. with men's wear orders at 30,000,000 yd., women's wear at 9,000,000, and auto cloths at 1,000,000. Women's wear orders are currently running at about 1,500,000 yd. a week. Sales of men's wear suitings are light, due to the fact that mills are approaching the end of the fall season. The new spring and summer lines of men's wear materials will be opened this month.

The bonus has failed thus far to stimulate clothing sales at retail to any unusual extent. What buying was done was confined to regular weight merchandise. Meanwhile, the bulk of the retail business is being done on sports jackets, swim suits, slack trousers, and golf apparel.

Survey of Current Tropical Sales

Tropical worsted style trends as defined in this season's retail market are charted and analyzed in an interesting survey just completed by Associated Wool Industries under the direction of F. B. Todd, director of the Merchandising Department.

Eleven leading mills, which each submitted 20 best selling styles, were: American Woolen Co., Arlington Mills, L. Bachmann & Co., Bell Company, Berkshire Mills, Botany Worsted Mills, Jamestown Worsted Mills, Pacific Mills, Selden Worsted Co., Shirreffs Worsted Co., J. P. Stevens & Co.

A heavy predominance of light shades is reported in the first four groups with a majority of light shades important through the ninth group. Grays registered 61% of the total, tans 22%, blues 15% each and blacks and whites 1% each.

Assuming a style in the first group to be 20 times as important as a style in the twentieth group, this table of percentages translated accordingly results in the following interesting percentages: grays 67.8%, tans 18.4%, blues 11.9% black 0.4% and white 1.5%.

Patterns were classified for purposes of analysis as follows: Solids, plain mixes, twists, nubs, large checks, small check and stripes. In terms of percentage ranking, solids achieved 5% of the total, plain mixes 13.5%, twists 7%, nubs 5%, large checks 38%, small checks 18.5% and stripes 13%. The total number of styles containing nubs in decorations—stripes, checks or overchecks is approximately 42%.

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Prices and Statistics

Key wool prices of July 1 and a month ago, contrasted with the last two years:

	July 1 1936	June 1 1936	July 1 1935	July 2 1934
Fine and fine med. territory	$0.84	$0.85	$0.69	$0.80
Ohio 3/8s	.38	.38	.31½	.32½
Tops fine 64-66s	1.08	1.10	.94	1.09
average 3/8s	.96	.98	.79	.91½
high 1/4	.90	.92	.67½	.84
Noils, fine	.68	.70	.55	.52
1/4	.54	.55	.42½	.41½
2-40s 60s wstd yarn.	1.55	1.55	1.37½	1.53½
8020 serge	1.95	1.95	Not quoted	

Current statistics on wool consumption and mill activity follow, activity percentage based on single 40-hour shift, 5 days per week. May is a 4-week, April a 5-week period.

	May	April
Wool consumed, clean equiv.		
Apparel wool, lbs.	17,292,000	20,590,000
Carpet wool, lbs.	7,036,000	8,755,000
Machinery Activity		
Looms (50" wide)	96.0%	95.8%
Carpet looms	59.8%	62.8%
Combs	89.9%	91.8%
Worsted spindles	71.3%	74.3%
Woolen spindles	112.3%	105.8%

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Price Trend in Wool a Question Mark

Turnover of raw wool in the Boston market during June was not large and transactions were slowing up at the end of the month, so discussion of the future price trend occupied most of the attention. As usual, there are two schools of thought. Prices paid in the West by a few manufacturers have surprised some dealers by being so high, and this gives a bullish tinge, but those of an opposite

mind contend that prices have risen about as far as they can since the low around May 1. Considering all the factors, the outlook is for firm prices at the current levels for several months at least.

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Organize Company to Produce "Artificial Wool"

Organization of the Lanatin Corp., 11 West 42d St., New York, for the production of "artificial wool" under the Rossati patent, was announced last month by Leonard Prince, president and general manager of the company. The "artificial wool" to be produced by this company is known as Lanatin. Included among the experimental fabrics which have been made thus far are one composed of 60% Lanatin and 40% cotton; and another composed of rayon waste, Lanatin, carpet wool waste, with cotton back. The Rossati process (U. S. Patent No. 1,889,377) consists essentially of treating bast fibers (preferably jute), cut into predetermined lengths, with concentrated caustic soda solution; extracting; and heating at about 212° F. until the fibers separate into the individual filaments and attain the desired curl. The material is then washed, bleached with hypochlorite in the usual manner, treated in a bath of sulphonated fatty acid to soften the fibers and make them pliable, extracted, and dried.

The company has contracted to purchase equipped the plant formerly operated by Massasoit Mfg. Co., at Oakdale, Conn., and is planning to install a small amount of special machinery Lanatin Corp. has been authorized to issue 150,000 shares of capital stock, 45,000 shares of which, according to the prospectus, are being offered to the public "as a speculation."

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Exhibits to Stimulate Carpet Merchandising

Three major exhibits will be maintained in Chicago and New York during July carpet and furniture openings to inform attending retailers of the extensive fall merchandising program sponsored by the Institute of Carpet Manufacturers of America in an effort to promote increased sales of profitable merchandise.

Basic theme for all three exhibits will be the dramatization of practical and effective methods which retailers may adopt for participation in the Fall Style Exposition of American-loomed, wool pile carpets and rugs. This Exposition sponsored by the Institute to stimulate sales on style-important, regular-priced merchandise, will be nation-wide in scope and will usher in the year's heaviest buying season.

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Wool Industry Briefs

Farr Alpaca Co., Holyoke, Mass., has opened a selling office at 2 Park Ave., New York. The linings, tropicals, etc., will still be handled by Henry C. Martin, the rayon gray goods and dress goods by J. W. Valentine & Co., and rayon underwear fabrics by C. K. and N. H. Aronsohn. The women's wear fabrics will be sold at 469 Seventh Ave., under management of Terhune, Yereance & Wolff; and new types of fabrics are being developed for distribution through Iselin-Jefferson Co. R. C. O'Brien will continue to sell the yarn production. A department for decorative fabrics will be under Leslie H. Pell. The company is developing its specialized selling plan and expects to push the development of its newer lines including fabrics from rayon, cotton, staple fiber and worsted blends. The company lost $822,213 for the 11 months ended April 30, 1936, but the management is hopeful of getting back to a profitable basis.

North Star Woolen Mills have advanced prices 20 to 25c. on its line of summer weight blankets.

Kerrville, Texas, reports large sales of mohair at 51 to 61c., and of wool at 26 to 31c.

Pre-opening business in men's wear for the spring 1937 season has been current in parts of the market at discounts below the rates at which the lines are expected to be officially opened. This is an old practice and the usual criticism of it is again heard.

Max J. Schneider, head of Merit National Shrinking Works, New York, has been re-elected president of the Textile Refinishers Association.

Blanket business next season will be actively pushed not only by attractive colorings but by stressing by retailers of a "moth proof" line which is said to be taking hold.

Orders for more than 1,500,000 yd. of blue woolen cloth for army uniforms will be given to American manufacturers as soon as plans, now under consideration by a board of army officers, are completed and approved by the General Commanding, for Secretary of War Dern. General Craig, acting on the widespread demand of the service for a return to the traditional blue uniforms for dress and social wear, has had a board at work on the problem for some time.

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Wool Mill News

Empire Woolen Mills, Long Beach, Calif., began operation in the reconstructed plant at Seventeenth Street and Nadeau Avenue here the last week in June, with Thomas Thomas as superintendent, employing 125 workers. The mills were last operated several years ago as the **Pioneer Woolen Mills.** The new corporation is headed by E. M. Lewis with Thos. Williams, secretary, and $25,000 has been spent to repair the plant and install additional equipment. Plant is equipped with 12 sets and 27 wide looms.

Atlanta (Ga.) Woolen Mills has work under way on one-story addition to cost $35,000 with new equipment.

Peerless Woolen Mills, Rossville, Ga., has started work on a 140x400 ft. addition to house additional weaving equipment, a unit in a $400,000 expansion and improvement program.

Rohmer Wool Scouring & Carbonizing Co., Newton, Mass., has filed plans for new one-story addition, 40x100 ft., to be used primarily for storage and distribution.

Ohio Carpet Co., West Warren, Mass., has leased former property of Hartland (Me.) Mills, Inc., and has begun remodeling and improving for new plant, to replace mill at West Warren destroyed by fire a few months ago. Mill will be equipped to give employment to about 200 operatives.

Soo Woolen Mills, Sault Ste. Marie, Mich., have awarded contract to MacDonald Construction Co., Sault Ste. Marie, for second-story addition to present one-story mill, 48x78 ft.

Cocheco Woolen Mfg. Co., East Rochester, N. H., has approved plans for extensions and betterments, including finishing department and enlargement of power house, with installation of an electric generating unit and accessory equipment to replace existing water-power facilities. Cost, $40,000.

American Woolen Co., New York, N. Y., has asked bids on general contract for new one-story L-shaped addition to Beaver Brook Mill, Lakeview Ave., Collinsville, Mass., 33x96 ft., and 50x53 ft. Cost over $75,000, with equipment.

E. T. Rugg Co., Newark, Ohio, has awarded general contract to Cooper Construction Co., Newark, for new two-story mill addition, 84x100 ft., and for one-story office building, 35x84 ft. Cost over $60,000, with equipment. C. L. Inscho, 145 North High St., Columbus, Ohio, is architect.

Staunton (Va.) Woolen Mills new plant, employing about 75 women, was scheduled to be completed by July 1.

Crescent Woolen Mills Co., Two Rivers, Wis., has let general contract to Joseph W. Hoida, Two Rivers, for new two-story mill addition, 15x35 ft. Sylvester Schmitt, Two Rivers, is architect.

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Wool Financial Notes

James J. Regan Mfg. Co., Rockville, Conn., will reorganize under Section 77B. The company, it was stated, plans to operate and pay creditors in full.

Taft Woolen Co., Caryville, Mass., has been closed permanently, through the retirement of Addison E. Bullard, head of company.

George H. Gilbert Spinning Co., Gilbertville, Mass., has been organized with capital of $101,000, as an interest of the George H. Gilbert Mfg. Co., with local mill, idle for some time. New company will operate at the plant for the production of wool yarns. Harold A. Weinstein is president of new organization, and Isidor Meyer, Brookline, Mass., treasurer.

Noanet Mfg. Co., Inc., 131 Lexington St., Waltham, Mass., recently organized with capital of $50,000 and 100 shares common stock, no par value, plans operation of local mill for production of woolen and worsted goods. Harold Singer is president, and James J. Regan, treasurer.

Collins & Aikman Corp. netted $1,213,525 for the three months ended May 30, 1936. Earnings are equal to $1.96 on the common against $1.43 the year previous when net income equalled $911,955.

American Woolen Co. has declared dividend of $1.25 on preferred stock, bringing arrears to $60.25. Officers declared that a reported plant to capitalize the arrears by a distribution of new stock was "grossly exaggerated."

Tygarts Valley Woolen Mills, Philippi, W. Va., is reopening the woolen blanket mill formerly known as Philippi Woolen Mills, idle since 1929. Officers of new company include T. L. Barner, president and manager; A. S. Hawkins, treasurer.

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TEXTILE WORLD'S

Rayon & Silk Digest

THE *Rayon Organon's* statement that world production of rayon yarn and staple fiber for 1935 passed the billion-pound mark for the first time in history, confirms the estimate made in our Annual Number last February. The *Organon's* total of 1,069,902,000 lb. (comprising 963,063,000 lb. yarn and 133,839,000 lb. staple) compares with our total of 1,089,140,000 (including 972,455,000 lb. and 116,685,000 lb. respectively.)

The billion-pound mark, impressive as it is, is not the most important part of this story. The amazing thing is that since 1929, world output of rayon yarn and staple fiber has more than doubled—going from 444,374,000 lb. in 1929 to 1,069,902,000 lb. in 1935. That for a period of world-wide depression.

—*Editor.*

Rayon Price Rise Adjusts Differential

The advance in viscose and cuprammonium yarn prices, which started June 15 with the issuance of a new viscose list by the Viscose Co., has had a stimulating effect on a healthy market. By the opening of July most firms had adjusted to the new levels. The revision provided for advances of 1 to 3c on all viscose process yarns of 150 denier and upward; the market's key number, 150- 24/40 thus was raised from 57c. to 60c. The Viscose Co. offered no comment in making public its new scale of prices. The revision serves to bring the heavier yarns into a more logical price relationship with the finer counts which were advanced last December. The raise had been anticipated for several weeks, and buyers booked heavily; so that the new levels will not become actually effective until current orders are shipped which will be about the middle of August.

Another significant development was the announcement June 18 by Industrial Rayon Corp., of a 5c. advance in oiled 150 denier knitting cones, bringing the price to 55c; the advance likewise raised standard knit fabric to 67c. Producers have long complained that these knitting yarns were selling at unprofitable prices, and Industrial's move is welcomed as a step in the right direction.

The revised Viscose Co. price list on viscose process yarns follows:

		Bright—Dulesco—Filenza		
		Skeins		Cones
Den.	Fil.	1st Qual.	2nd Qual.	1st Qual.
50	14	$1.07	$1.02	$1.12
75	30	.90	.87	.95
75	45	.94	.91	.99
100	40	.79	.77	.82
100	60	.83	.81	.86
125	36	.66	.64	.68
150	24–40	.60	.58	.60
150	60	.62	.60	.62
150	100	.67	.65	.67
200	30	.57	.56	.57
200	75	.60	.59	.60
200	133	.64	.62	.64
300	44	.49	.48	.49
300	60	.49	.48	.49
300	200	.54	.52	.54
450	100	.49	.48	.49
600	100	.49	.48	.49
900	100	.49	.48	.49

The revised American Bemberg Corp. list follows:

150 denier first quality no twist skeins	$0.60
200 denier first quality no twist skeins	.57
200 denier first quality converted	.61

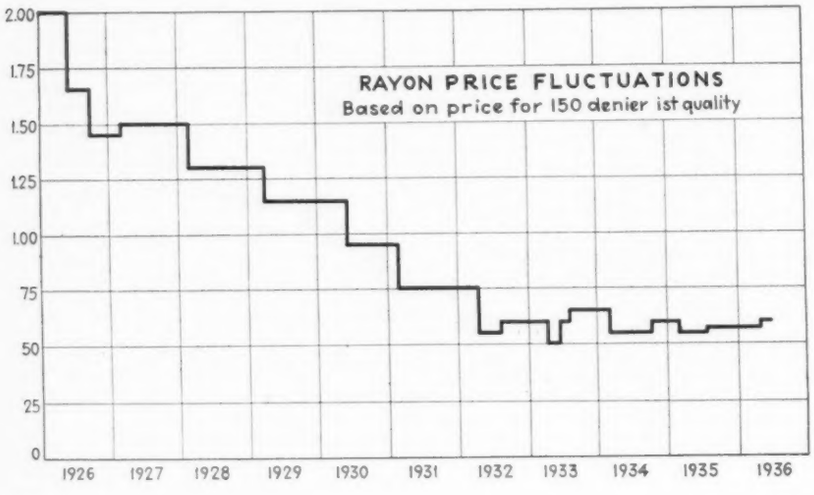
Rayon Salesmen Picnic

No one knows just what sort of a riot would occur if a customer turned up by mistake at an annual outing of the Rayon & Synthetic Yarn Peddlers' Association of New England and muttered something about placing a large order, but fortunately such an emergency has not arisen. The seventh party was held at the New Bedford Country Club on June 5.

Earl Litchfield, of du Pont Rayon Co., dashed in with a 91 gross, 72 net, to win the Robert Burnet Memorial Trophy in golf. The eyebrows that were raised when it was discovered that the handicap of 19 had been "given" Mr. Litchfield by his friends were later cheerfully changed to lowered lips (excusing the mixed metaphor!) when the cup was filled with champagne at Mr. Litchfield's expense—or expense account.

Officers chosen were: president, Bartlett Guild, Celanese Corp.; vice-president, George I. Rounds, Industrial Rayon Corp.; secretary, H. H. C. Wilcox, Franklin Rayon Corp.

Stanley B. Hunt, editor of the *Rayon Organon*, was a guest, but he wasn't asked to give any consumption figures at the banquet.



Rayon Fabric Sales

Deliveries of rayon woven broad goods during May 1936 were nearly 45% above May 1935, and were slightly above April, 1936, according to figures issued June 24 by the National Rayon Weavers Association:

(1934 = 100)	May 1935	April 1936	May 1936
Taffetas, Twills, Linings and Other Staples	151	216	218
Dress Goods, Novelties, and Other Fancies	70	92	102
Total	98	135	142

Viscose Yarns Scarce

The prospect of a shortage of viscose process yarns during fall strengthened this month. Demand continued active; stocks in producers' hands were reported low, and firms were accepting future orders only on very limited basis.

Current Rayon Data

Key rayon prices and statistics follow:

Prices:	July 1 1936	June 1 1936	July 1 1935	July 2 1934
Viscose process				
75 denier (18-30 fils.)	$0.90	$0.90	$0.85	$0.90
100 denier (40 fils.)	.79	.79	.74	.75
150 denier (40 fils.)	.60	.57	.55	.55
Acetate process				
150 denier	.60	.60	.60	.67
Cupra. process				
150 denier (112 fils.)	.65	.65	.60	.70

	Indices of Deliveries*	
Statistics** Month	1936	1935
June	498	381
May	428	417
April	433	274

*Rayon Organon.
**Exclusive of Acetate. Daily aver. 1923-25 = 100

Current Silk Data

Key silk prices and statistics follow:

Prices	July 1 1936	June 1 1936	July 1 1935	July 2 1934
Crack XX 13/15 white 78%	$1.65	$1.45½	$1.40	$1.19
Tram, 5thd Japan 85%	2.27	2.16	2.22½	2.10
Tram Crack XX 78%	2.20	2.08	1.97½	1.85
60s-2, spun silk	2.85	2.85	2.75	2.95

Statistics	Imports	Approx. Deliveries	Stocks at Warehouses
Apr., 1936	26,973	34,564	46,098
May, 1936	26,055	32,087	40,066
June, 1936	26,780	31,437	35,409

Yarn Friction Studied

Dr. Irving J. Saxl, consulting physicist, of Providence, R. I., whose name has lately been identified with important progress in textile research, has now developed a method of quantitatively measuring the friction of individual yarns. In the June issue of the *Journal of the Franklin Institute*, Philadelphia, in which he describes his method, he draws the following conclusions from his studies to date:

"1. The coefficient of friction for synthetic yarn is comparatively low. A coefficient of 0.126, as is the case with viscose-type yarn, is only a fraction compared to the friction of leather on dry metals, with a coefficient of about 0.56.

"2. The coefficient of friction in spun yarns is particularly low. This is one of the reasons why it is often possible to spin and weave rayon staple without slashing.

"3. Conditioning reduces yarn friction.

"4. The friction of acetate-type yarns is generally higher than the friction of viscose-type yarns."

Dr. Saxl hopes that his invention will aid the determination of the effect of yarn characteristics on the feel and drape of fabrics, the resistance of hosiery to the entering of the foot, etc., and will make possible an accurate control of yarn friction.

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Stevens to Sell Slater Rayons

Further extension of the rapidly widening selling scope of J. P. Stevens & Co., Inc., in the rayon fabric field became known June 23 with the announcement by H. Nelson Slater, president of S. Slater & Sons, Inc., that, effective June 29, the Stevens company would take over the selling of the rayon fabric output of the two Slater plants. He added that the Worth Street, New York, office of S. Slater & Sons would be discontinued but that the selling personnel would continue under direction of M. P. Epstein; the Slater division of the Stevens organization will be located in the Stevens building, 44 Leonard St., New York.

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Silk Rise Slows Sales

The raw silk market entered July rather breathless, after a fluctuating advance which totaled about 30c. between the second and fourth weeks of June. The rise was attributed partially to a shortage in New York of spot silk and to artificial tightening by speculative influence. Importers did not wholly approve of the rise, as it slowed up business. It was believed that prices will show some easiness later this month, resulting in active coverage by both weavers and knitters. The chief business is expected to come from, first, underwear fabric weavers, and second, hosiery knitters.

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Industry Briefs

Metals Lead in Silks—Fall interest in silk fabrics centers on metals, with fashion emphasis on crinkled sheer matelasses and printed metals, it is stated by the International Silk Guild. Other interesting developments are the spread of lacquered finish formerly used mostly for satins, to silk taffetas, and the advent of silk satins having a new "leathery" surface.

Greater whiteness and a different degree of dullness in its semi-dull and Xtra-Dul yarn are developments announced last month by North American Rayon Corp.

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Rayon and Silk Mill News

Edward Bloom Co., New London, Conn., has closed its local plant for an indefinite period, and will transfer operations to its other mills at Putnam, Conn., and Paterson, N. J., where corresponding increased production will be carried out.

M. Salzberg Sons Co., Putnam, Conn., is transferring machinery and equipment to the Central Falls, R. I., plant.

Hartford Rayon Corp., Rocky Hill, Conn., is constructing a brick addition, one-story, 30x20 ft., to house additional equipment to be sent from the South.

National Silk Co., South Coventry, Conn., has completed repairs to a 50-foot tower and 15,000-gallon water tank which collapsed May 9. Damage was less than $2,000. The pond dam did not break.

Cheney Brothers, South Manchester, Conn., continues to consolidate manufacturing operations. The cravat department is being moved to the north mill at Elm and Forest Streets. The winding operations are being transferred to the third floor of this mill. When these changes are completed in four months, the ribbon factory will be without manufacturing of any kind. The silking and drying operations in the throwing division will be changed to the yarn and dyehouse on Pine Street. Some of the looms in the ribbon plant will be transferred to other weaving departments and others will be junked, or sold. Raymond W. Goslee, plant engineer is in charge of the moving plans.

Celanese Corp. of America, Inc., Amcelle, near Cumberland, Md., has begun superstructure for the first of three new one-story additions to mill, for which general contract has been let to George F. Hazelwood, Cumberland. Cost over $80,000, with equipment.

Abdon Textiles, Inc., Fall River, Mass., recently organized, have leased a one-story mill at rear of 2070 Pleasant St., for new plant for manufacture of rayon products, and will occupy at once. Bernard and Julius Lebowich are president and treasurer, respectively.

Pepperell Mfg. Co., Fall River, Mass., is adding 138 Draper modern rayon looms to its local rayon weaving division. They will be in operation by the end of this month.

Tubize Chatillon Corp. will lay before stockholders in New York on July 30 proposals to expand plants at Hopewell, Va., and Rome, Ga., at a cost of $2,800,000 according to Roland L. Taylor, chairman of the board.

Moster & Feldman, Brooklyn, N. Y., have installed an H-W silk conditioner. The **Hazleton (Pa.) Silk Co.** have ordered an H-W conditioner for twist setting.

Burlington Mills, Burlington, N. C., are spending $150,000 on additions and new machinery. Plan is to add 100 employes when project is finished.

Master Silk Co., Hughestown, Pa., has taken over a building at West Pittston, Pa., and will equip at once for new mill, to replace plant at Hughestown destroyed by fire a number of months ago. Operations will be concentrated at West Pittston in the future.

Interlaken Mills, Arkwright, R. I., has awarded contract to John F. McCusker, Phenix, R. I., for a 2-story office addition. C. R. Makepeace & Co., 1015 Grosvenor Bldg., Providence, is the architect.

Minjoy Silk Mills, Morristown, Tenn., has begun the construction of an addition 40x 145 ft., in which four car-loads of machinery will be installed.

Canadian Celanese, Ltd., Drummondsville, Que., has plans under way for expansion at mill. Work will be carried out over 12 months and will cost $750,000.

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Rayon and Silk Financial

Cheney Brothers, South Manchester, Conn., has been granted a continuance until Oct. 15 for filing reorganization plans under Section 77B of the Federal Bankruptcy Act.

Old Colony Silk Mills Corp., New Bedford, Mass., in process of liquidation, disposed of the equipment and machinery of the plant at public auction (June 25). Included were 188 Crompton & Knowles 52-inch silk looms, winding and warping equipment.

Keene (N. H.) **Artistic Narrow Web Co.** has been acquired by Factors, Inc., Worcester, Mass., which is arranging with prospective purchasers for continued operation of the plant.

Roslyn Silk Mills, Inc., Bayonne, N. J.—Mill property of this company at 166-86 West Fifty-second St., has been purchased by Ershler & Krukin, Inc., West New York, N. J., and will be occupied in future for another line of production.

Mallinson Fabrics Corp., New York, is being organized, the preferred stock of which is held by E. Gerli & Co., and one third of the common is held by H. R. Mallinson & Co. The new company will take over the Mallinson good will, trade marks and name. Officers of the firm are: Irving Hanson, president; John Gerli, vice-president; Thos. J. Mangan, secretary; J. H. Ferns, treasurer, and Robt. Berman, assistant treasurer. The business is being transferred from the old Fifth avenue quarters of the Mallinson company to 119 W. 40th St., New York.

Franklin Rayon Corp. is offering to shareholders the purchase of $2.50 prior preference stock at $49.50 and common stock at $7. Proceeds of sale will be applied against borrowings.

Liberty Throwing Co., Inc., has removed its New York office to 1450 Broadway.

H. and B. Markowitz, operators of Fulton Silk Mills and Stone Silk Mills, Ogdensburg, N. Y., are planning to build a silk dyeing plant there to cost in excess of $175,000.

Alvera Textile Corp., Allentown, Pa., recently organized, plans early operation of a local rayon and silk weaving mill. Morris Perkin, Allentown, heads new company.

Duplan Silk Corp., Slatedale, Pa., sold surplus real estate and machinery at various locations on June 12 for a total of over $18,000.

Georgetown Silk Co., Wilkes-Barre, Pa., has leased the old North State Mills, Durham, N. C., from the Durham Hosiery Mills and will remove its equipment thither before end of August.

TEXTILE WORLD'S

Knit Goods Digest

THE knitted outerwear industry has demonstrated that it has learned the value of cumulative effort in sales campaigning. The "Swim for Health Week" and the broader promotion drive covering all branches of the industry not only should strengthen its hold on its present markets, but may conceivably add some new ones. In addition, there is the corollary benefit of price-stiffening in both wholesale and retail channels as a result of the type of publicity represented by this promotion. Incidentally, this additional result is often overlooked in the evaluation of such campaigns.

The activity of the outerwear division carries a moral for other less sales-conscious branches of the textile industry.—*Editor.*

3-Length Hosiery A Fall Highlight

The "three-length" stocking, which is becoming increasingly important, promises to gain rather than lose followers during the fall, according to a cross-section of market opinion gathered at the beginning of July. While some trade factors had doubted the permanence of the idea because it seemed to complicate the merchandising problem by adding leg sizes to foot sizes, the vogue appears to have been gaining steadily. Most of the firms making hosiery retailing at one dollar and above now include the proportioned length hosiery in their lines.

The basic idea of the triple length, of course, is to meet the needs of wearers whose leg-length does not come within set standards. Whether the innovation is here to stay remains an open question. Trade leaders, even while admitting good sales on their three-length numbers, hesitate to make forecasts. It is cited as one obstacle to general acceptance of the line, that consumers are still without full information on the new idea and that a widespread campaign of education will be necessary. Retailers themselves are becoming more interested in the three-lengths. Mills are meeting the chief objections—need of large store stock and difficulty of selection—by offering model types of stocks to stores. Another vital benefit of the three-lengths is that they all retail at above $1.00, thus giving stores their long awaited opportunity for a hosiery mark-up.

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Hosiery Price Break Bewilders Market

The hosiery market was confronted with a paradoxical situation this month when minimum prices of both branded and unbranded full-fashioned took a downward slant despite healthy buying and a generally sound statistical situation in the industry. The reduction started when some leading branded hosiery mills announced a lowering by some 15c. to 30c. per doz. of their minimum quotations. The stated aim of this cut was to give a greater profit margin to retailers on these lines. Since it was a direct bid for some of the business now going to unbranded mills, certain of the latter mills replied by putting their lists back on the old minimum of $5.25.

As this item went to press (July 7), market leaders were uncertain how far the new price weakness would go. The picture was full of contradictions. One leading unbranded mill definitely said it would fight against any cut, adding that it had raised prices only a week previous. Meanwhile, three basic points argue against any sustained weakness; (a) upward raw silk prices (b) curtailment; and (c) an active retail demand. However, buying eased since the new development because buyers were waiting to see what would happen. The reduction has had an unsettling market effect but trade leaders hoped that, if raw silk held up, the break would be limited to a private fight between a few big companies.

It is generally understood that the $5.50 to $5.85 price now quoted for several well-known brands allows of practically no profit.

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Underwear Prices Firming

Underwear mills are firm in all branches; fall buying is active and offices also report some reordering for summer. Manufacturers have been dissatisfied with profit margins, and have been waiting an opportunity to announce an advance. One firm announced a rise of 25c. per doz. on a staple cotton suit, June 24, and this, it was felt, might prove to be the start of a general increase.

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Fight Southward Trend

Preliminary plans for a drive to stem the southward trend of hosiery mills were formed at a community meeting held June 23 in Reading, Pa. The gathering was addressed by Hugo Hemmerich, superintendent Berkshire Knitting Mills, E. J. Pool, former president of Reading Chamber of Commerce and others. The meeting was called by Ralph Ringler, president of the Berks County Hosiery Employees Association, comprising non-union workers in 11 mills.

Certain speakers criticized the gathering because the labor union representatives had not been invited; Mayor J. Henry Stump and others in the Socialist City Administration refused to attend, claiming that the meeting was not properly representative of the community and of the section around Reading.

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Hosiery Sales Up 3%, Stocks Down, in May

Figures released by the National Association of Hosiery Manufacturers show that, due largely to an increased demand for women's seamless silk hosiery, anklets, and cotton bundle goods, total shipments of hosiery during May, 1936, at 9,379,143 doz. pr. were 254,784 doz. pr. or approximately 3%, more than in May, 1935. Total shipments of women's knee-length hosiery in May, 1936, reached a new high point at 395,561 doz. pr., against 213,591 doz. pr. shipped in May, 1935.

Total production, all types, in May, 1936, at 9,269,554 doz. pr. was approximately 110,000 doz. pr. below shipments for the month, bringing about a corresponding decrease in stocks, all of which was in the full-fashioned branch. Total stocks of hosiery of all types at the end of May, 1936, amounted to 19,076,449 doz. pr., which was 469,732 doz. pr. below the amount on hand one year earlier.

The following table shows shipments by major branches in dozens of pairs:

Type of hosiery	May 1936	May 1935
Total, all types	9,379,143	9,124,359
Women's Full-fashioned	2,729,091	2,716,163
Women's Seamless hosiery, excl. wool	1,043,467	862,684
Men's Half-hose, excl. wool	2,845,592	2,901,608
Children's and infants, hosiery*	317,931	313,477
Anklets	1,897,074	1,778,132
Cotton bundle goods	275,877	248,606
Ribbed goods	143,568	145,472
Woolen goods**	126,543	158,217

*Boys' and infants' socks, children's 5/8 flat and 7/8, boys' golf hose.
**Women's and men's seamless wool, men's golf hose, woolen bundle goods.

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Bulletins on Windfall Tax

Roy A. Cheney, managing director of the Underwear Institute, has been sending to his members an excellent series of bulletins analyzing in turn the various provisions of the "windfall" tax sections of the new revenue act. Mr. Cheney, in introducing the series, stated sagely to his members: "It has seemed wise to give you our analyses day by day as they are developed. If we gave all of them to you all at once I frankly think that the ordinary man, without legal training, would become lost in a maze."

When the series is completed, Mr. Cheney promises "to boil it down further in ordinary, common-sense language." The service is regarded as a most helpful one.

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Rapid-Fire Drives Aid Outerwear Sales

Rapid-fire action as regards promotional effort is becoming a feature of the knitted outerwear industry this year. No sooner had plans for the "Swim for Health Week," June 22-29, been completed by the National Knitted Outerwear Association and the athletic and swimming pool interests, than the outerwear association announced completion

of plans for its general knitwear promotion drive. The latter drive embraces all outerwear divisions and is being financed by a $20,000 fund which was completely subscribed by June 1. The drive opened July 7 with a formal fashion show and dinner-dance at the Hotel Astor, New York; more than 500 buyers attended and witnessed a display of all the newest lines. Plans are now being pushed to raise a fund of $100,000 for continuance of the promotion campaign through the coming year.

While it is still too early to get final sales results on "Swim for Health Week," early reports from retailers are very encouraging. One benefit was that the promotion strengthened the end-season tone of swimsuits and prevented the premature close-outs. More than 6,000 stores participated in the swimsuit event. Civic leaders made addresses emphasizing the physical and mental value of swimming; and nation-wide tie-ups were effected with swimming events by the national athletic associations.

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Industry Briefs

Southern Hosiery Manufacturers' Association held its annual meeting July 10 and 11 at Signal Mountain Hotel, near Chattanooga, Tenn. The meeting was featured with a discussion of the effect of Federal regulation on business. Donald Comer, president of the American Cotton Manufacturers Association and head of Avondale Mills, Alabama, was scheduled to address the association the first day of the meeting. A list of officers elected will be carried in the next issue of TEXTILE WORLD.

A petition for higher tariff to protect American industry against low-priced cotton hosiery imports, mostly from Japan, has been filed with the U. S. Tariff Commission by the National Association of Hosiery Manufacturers.

One hundred and ten Middle Western hosiery and underwear manufacturers teed off June 17 at Bob O'Link Golf Club, Highland Park, Ill., as guests of the Chicago Yarn Men's Circle at its 15th annual golf tournament. George T. Huchinson, Textiles, Inc., president of the circle and toastmaster at the banquet, presented the annual cup for low net score, 84-14-70, to "Jack" Glasner, Rockford Mitten & Hosiery Co. R. L. Frost, Allen A Co., with a low gross score of 83, was next. William J. Yates, Johnston Mills Co., registered the lowest score with an 82. After the banquet Earl Constantine, managing director of the National Association of Hosiery Manufacturers, spoke.

British Hosiery Sales Rise—Reports to the U. S. Department of Commerce from its London office tell of a rise in 1936 hosiery sales in Great Britain as against 1935. Cotton and rayon hosiery imports in which Japan and Germany respectively lead, shared this increase.

Collection Service Restored—The collection service department of the Underwear Institute which did notably good work in settling claims just prior to the N.R.A., but was later discontinued, has been resumed by order of the Executive Committee, the Institute announces. The service comprises first, a demand letter which carries no charge; second, a fee of 5% with minimum charge of $1.00 is made for supplementary collection work; and third, a proportionate increase in rates is made if the claim is sent to an attorney. All charges are held down to cost basis.

KNIT GOODS IN THIS ISSUE

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Knitting Mill News

Alabama Hosiery Mills, Decatur, Ala., are carrying out expansion at their plant, with installation of new knitting machines and auxiliary equipment.

Cooper-Wells Co., Decatur, Ala., hosiery manufacturers, are erecting an addition to their plant at a cost of approximately $15,000.

Gantner & Mattern Co., San Francisco, Calif., has added 1,600 sq.ft. to the manufacturing department in the mill on Mission St. to care for added swim suit and trunk business.

Walton Hosiery Mills, Inc., Defuniak Springs, Fla., have been organized with capital of 50 shares of stock, no par value, by Blair L. Klein and Stephen C. Weiss, who recently acquired local building which will be equipped for production of full-fashioned hose. D. M. Chew will also be an official.

Owen Osborne, Inc., Gainesville, Ga., has about completed the $50,000 repairs on their building which suffered severe damage by the tornado of April 6.

Walcott & Campbell Spinning Mill, Gulfport, Miss., recently acquired under foreclosure proceedings by John B. Lord, New York, N. Y., and associates, is being dismantled with machinery moved to a mill in Opelika, Ala. It will be remodeled and improved, with installation of new equipment for rayon and silk hosiery production.

Black Mountain (N. C.) **Hosiery Mills** has purchased a number of wrap machines for men's half hose. During the last 2½ years, the mill has almost doubled its machinery.

Foster Hosiery Mills, Burlington, N. C., is installing four additional full-fashioned machines at a cost of approximately $50,000.

Hazel Knitting Mills, Inc., Burlington, N. C., recently chartered with capital of $100,000, have taken over a local mill, formerly occupied by the Foster Knitting Co., and will improve and equip for new plant. Machinery installation is estimated to cost over $50,000. New company is headed by C. F., W. S., and Hazel Foster, all of Burlington. First noted is head of the Foster Knitting Co.

Durham (N. C.) **Hosiery Mills** have purchased three additional high speed full-fashioned hosiery machines for delivery this month.

Mock, Judson, Voehringer Co., Greensboro, N. C., has begun superstructure for new one-story addition, for which general contract was let recently to G. W. Kane, Greensboro. It will cost over $60,000, with equipment.

Ellis Hosiery Mills, Inc., Hickory, N. C., recently formed with capital of $100,000, have leased a local building for new plant. Initial installation will comprise 20 knitting machines and auxiliary equipment. New company is headed by C. N. and A. Taylor Mills, both of Hickory.

Whitener Mills, Inc., plans to erect plant at Hickory, N. C. C. H. Henderson, of James Knitting Mills at Hickory, will be vice-president. T. Manly Whitener has been elected president and treasurer.

Adams-Millis Corp., High Point, N. C., has ordered a "H-W" conditioner for twist setting.

Waldensian Hosiery Mills, Valdese, N. C., has installed 20ES color-in-color wrap machines and 20 HH PW machines. This installation was erroneously credited to the Pauline Knitting Mills in a recent issue.

New Way Hosiery Co., Philadelphia, has moved its finishing plant, stock and show rooms, and offices to its own building at Fourth and Market Sts. from Second St. at Allegheny Ave.

Interwoven Stocking Co., Morristown, Tenn., which recently purchased the former C. H. Bacon Co., plant there, has completed a program of improvement.

Strickland Hosiery Mills, Petersburg, Tenn., has constructed a new warehouse.

Kenmore Hosiery Mills, Fredericksburg, Va., are erecting a modern mill building to house the newly organized company.

Classon Knitting Mills, Ltd., will transfer its plant from Montreal to Sherbrooke during the course of the summer and will start operations with about 75 hands.

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Knit Financial Notes

F. & R. Knitting Mills, Los Angeles, Calif., have been organized with capital of $25,000, to operate a local plant. Arthur Rosen is principal incorporator. New company is represented by Alfred J. Smallberg, 541 South Spring St., Los Angeles.

Glastonbury Knitting Co., Addison, Conn., is being reorganized under the new Federal bankruptcy law. Operations at mill will be continued under the direction of Benedict M. Holden, Jr., Hartford, Conn., permanent trustee.

Passaconaway Weaving & Knitting Co., Lowell, Mass., has been chartered with capital of 100 shares of stock, no par value, to operate a local mill. Arthur L. Eno is president, and George A. Eno, 335 West Sixth St., Lowell, treasurer and representative.

Dry Dock Knitting Mills, Inc., Brooklyn, N. Y., have been formed with capital of $15,000, to operate a local mill. New company is represented by Harold Kornfeld, 401 Broadway, New York, N. Y., attorney.

Knit-Rite Knitting Mills, Inc., New York, N. Y., have been organized with capital of $5,000, to operate a knitting mill in the metropolitan area. New company is represented by Albert A. Kwass, 99 Nassau St., New York, attorney.

South Knitting Mills, Inc., New York, N. Y., have been formed with capital of $6,000, to operate a knitting mill in the metropolitan district. New company is represented by Louis Schack, 299 Broadway, New York, attorney.

Aldon Knitting Mills, Inc., Queens, L. I., New York, have been organized to operate a local mill. Company is represented by Sol D. Levy, 1440 Broadway, New York, attorney.

Finer Full-Fashioned Hosiery Co., Charlotte, N. C., has been granted a charter. Authorized capital stock is $100,000, with $7,200 subscribed by Burgess L. Kenimer, August Nordmann and Mrs. Evelyn Kenimer. The company will engage in the manufacture of hosiery, underwear and other knitted products by early fall.

J. H. Blaetz, Inc., Philadelphia, Pa., bankrupt—Machinery and equipment at this mill were sold at public auction to a number of buyers, June 9, proceeds approximating $25,000. Company has been in receivership for several years.

Ellis Silk Hosiery Co., Philadelphia, Pa.—Machinery and equipment at mill of this company has been sold at public auction to a number of bidders. Sidney E. Smith was recently appointed receiver in equity.

Lehigh Silk Hosiery Mills, Philadelphia, has terminated its receivership with discharge by the Federal court of the receivers.

Signature Hosiery Co., Inc., Philadelphia, Pa., has sold its three-story mill, laboratory, power house and other miscellaneous buildings to Elmo, Inc., Philadelphia, which will use for another line of manufacture.

Dixie Hosiery Mills, Inc., Newport, Tenn., has purchased the **Sevierville** (Tenn.) **Hosiery Mills.**

TEXTILE WORLD'S

Processing Digest

SLOWLY but surely the textile finishing industry is becoming sales-minded. One significant sign of this much-needed trend was the appearance of a group of spokesmen for new processes at the conference held recently, in New York, by the Fabric Section of the Fashion Group. This section, which comprises leading stylists of both textile firms and retailers, constitutes an important link between the processing industry and the consumer. The growing interest of these stylists in processes as they relate to the sale of textiles was indicated in the attendance —135 stylists were present and heard comprehensive descriptions of the various processes.

Assuredly this is a step in the right direction, and in the direction which we pointed out on this page in our May issue. Let us hope that it marks the beginning of closer relationship between the processors and the consumers, and that more firms will follow the example of those who participated in the Fashion Group conference.—*Editor.*

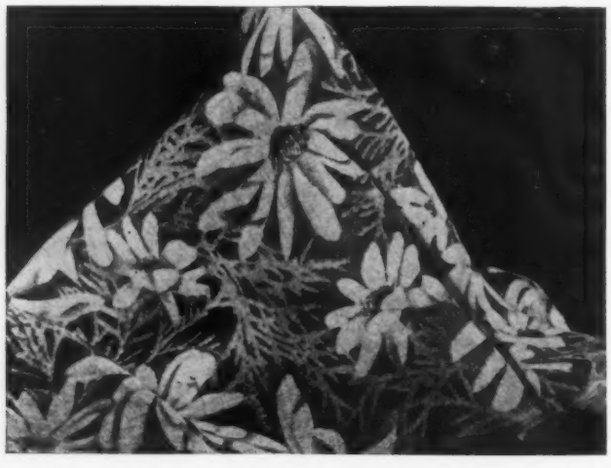
Photo-Lithographic Process for Engraving Printing Rollers

Development of a new photo-lithographic process for engraving printing rollers has been announced recently by Eureka Photo Mechanical Equipment Co., 350 West 31st St., New York. While the new method is suitable for making all types of designs, it is said to be particularly desirable for use in conjunction with designs which are impossible or impracticable to produce by pantographic methods. The accompanying illustration of a fabric printed from rollers engraved by the Eureka method gives some idea of character of designs obtainable.

This method of photo-lithographic engraving has been made possible by the development of a resilient plate, on which is photo-composed the design to be engraved on the copper printing roll. The first step is photographing the artist's unit design. Next the different colored portions of the design are separated and negatives made corresponding to each. Each negative is then prepared with the proper ground (screen). Later it is exposed and repeated on a resilient, sensitized plate which is the same length as the roller and the same width as the circumference of the roller. This operation is repeated for each color.

The resilient plate is then placed in a special transferring machine and, after the photo-composed design is inked up on the plate, a transfer is made from the plate to the copper roller. Incorporated in this transferring machine is a compensating mechanism which permits the design to join exactly. After the design has been transferred onto the copper roller, it is powdered with a resist, heated to a temperature sufficient to turn the resist into enamel, and the pattern is etched in acid. The roller is then cleaned and any spots which may not have etched properly are touched up by the engraver. At this point the roller is ready for printing.

Advantages cited for the new process are: (1) The resilient plate permits a direct transfer to the copper roll, thus insuring a sharp image on the roller. (2) If the copper roller is eccentric to its shaft, it will receive an even impression, because the roller is controlled on the resilient plate by its circumference and not by the bearings which hold the copper roller shaft. (3) A ground of a honey-comb pattern permits the color to remain in its proper cavity while the roller is printing and therefore to reduce flushing of design. The honeycomb ground also helps to support the doctor blade on very large blotches, with the result that more uniform distribution of color is effected. (4) The process is not limited to the honeycomb ground, but can use half-tone grounds for reproducing difficult and delicate patterns.



Print from photo-engraved roller showing gradations of tone

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Production and Sales of Synthetic Dyes

Domestic production and sales of synthetic dyes for 1935 showed increases of 17% and 16%, respectively, as compared with the previous year, according to data released last month by the U. S. Tariff Commission. The output of 101,817,000 lb. of dyes in 1935 was 9% less than the peak year 1929. However, the production of indigo has declined sharply in recent years (from 29,320,000 lb. in 1929 to 13,614,000 lb. in 1935) and, if the output of indigo in 1929 and 1935 is deducted from the totals for the respective years, 1935 production of other dyes exceeds that in 1929 by 6,000,000 lb., or 7%. Sales of synthetic dyes in 1935 totaled 97,826,000 lb., valued at $51,405,000. Unit value of sales averaged 53c. per pound in 1935, as compared with 51c. in 1934. In addition to the dyes covered above, there were produced in 1935 474,000 lb. of compounds of the Naphthol AS series, valued at $709,000, and 104,000 lb. of Rapid Fast Colors, valued at $121,000.

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Synthetic Resins

Two new synthetic resins which have been developed especially for use in cellulose ester lacquers of the modern high-gloss, high-solid content-type, are announced by Bakelite Corp., 247 Park Ave., New York. These products, XR-3,180 and XR-4,357, are said to be outstanding in their resistance to moisture, oxidation, strong soaps, acids, oils, and greases, and to have an excellent degree of color stability. One of the suggested applications is for the coating of textiles.

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New Dyes

E. I. du Pont de Nemours & Co., Inc., announces the following new products: Pontachrome Blue ECR, a chrome dye producing brilliant reddish blue shades of very good fastness to fulling, salt water, rubbing, perspiration, and carbonizing, and fairly good resistances to light; and Acetamines Brown GD, Brown SR, and Dark Brown S, three acetate dyes producing respectively, yellow, red, and neutral shades of tan and brown.

General Dyestuff Corp., announces the following new product: Fast Gold Orange Salt GR, a color salt yielding golden orange dyeings with a number of compounds of the Naphthol AS range, those with Naphthols AS, AS-D, and AS-SW showing the best all-round fastness.

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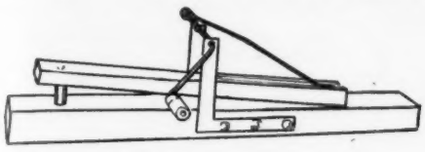
Lusterized Cotton

Efforts are now being made in England to develop a commercial process for lusterizing cotton raw stock. One of our British correspondents has had an opportunity to examine fabrics made from experimental lots of the processed cotton and reports that cloth made from treated middling Delta cotton resembles in appearance that ordinarily made from the finest Sea Island cotton, while fabrics woven from treated white Egyptian cotton rival those made from silk. The inventors state that the process is both chemical and mechanical and that it does not affect the spinning qualities of the raw stock.

Apparatus for Testing Fastness to Crocking

Development of a simple piece of apparatus for testing fastness to crocking has been announced recently by Walter C. Durfee, of W. C. Durfee Co., Inc., 516 Atlantic Ave., Boston. The device consists of a slide fitted with a wooden finger over which a 2x2 in. piece of cotton cloth is held by means of a ring. A hand crank permits the slide to be moved over a distance of 4 in. The slide is loaded to weigh 2 lb. at the finger. A base and brackets to support



Tester for Crocking

the crank complete the device. The test is carried out by placing a sample of the cloth to be tested under the finger of the machine and causing the finger to rub back and forth on it. The device is being used by the research committee of the American Association of Textile Chemists & Colorists in developing a standard test for fastness to crocking. This committee has recommended tentatively that the results obtained by 20 double strokes are suitable for determining comparative fastness to crocking.

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Red, White, and Blue

Plans for publication of the official card containing standard colors for the American flag are now nearing completion and this card will be issued shortly, it is announced by the Textile Color Card Association. The association has been working for several years with the color committee of the Federal Specifications Board representing the Army, Navy, and Marines and Bureau of Standards. Final tests have been made and the standards accepted.

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Industry Briefs

The outing of the New York section of the A.A.T.C.C. was held June 26 at the North New Jersey Country Club, Paterson, N. J. Plans for the event were in charge of Henry F. Herrmann, chairman of the outing committee.

The fall silk card for 1936, sent to the trade by the Textile Color Card Association, presents 44 shades, in which group a series "Tailleurs de Minuit" is featured.

Sharp criticism from dyers followed the announcement last month by the Passaic (N. J.) Valley Water Commission of an 18% water rate increase, effective July 1. George Baldanzi, president of the Paterson, N. J., Dyers Federation, hinted that the increase might result in a removal of dyeing and finishing plants from the Paterson area. He added that when the Commission took over the Passaic Consolidated Water Co., it raised rates 500% to dye shops, despite warning that it would harm the industry.

A new denim said to have various distinctive characteristics, was shown at the IAGM convention, Chicago, last month by Joshua L. Baily & Co. The fabric is Sanforized and is known as Blueserge Buckskin denim. A special treatment called the NuBlue process which is understood to require special machinery is employed and gives a distinctive and deep indigo blue to the fabric.

Koroseal has been found suitable for waterproofing shower curtains, according to an announcement made by B. F. Goodrich Co., Akron, O. Koroseal is a synthetic rubber-like substance, which is said to have good resistance to ageing, to sunlight, oxygen, and ozone.

Improved effectiveness of the design registration movement was assured, May 13, when it was announced that New England printers were cooperating. These printers now clear designs for the uptown market through the Industrial Design Registration Bureau, of the National Federation of Textiles, Inc.

Research on textile drying to be carried out under the direction of the United States Institute for Textile Research aims to provide sufficient information so that any kind of textile material can be dried with maximum speed and economy but with minimum damage to the quality of the product. A fund of $5,000 is needed for this study, and subscriptions of $100 each are sought, this sum qualifying cooperators to receive confidential progress reports. About 30% of the fund has been subscribed.

Announcement of a new process for metallic printing on textiles was made July 2 by B.V.D. Co., in New York. The company claims that gold or silver print fabrics so processed are 100% washable and non-tarnishable. A display at the B.V.D. sales conference at the Pennsylvania Hotel, New York, showed the new fabric, known as "cloth-of-gold," made up in robes, pajamas, and other garments.

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Silk Dyers and Union Negotiating Contract

Danger of a strike in the silk and rayon dyeing and printing industry appears to be averted as we go to press. Provisions of the new contract between employers and the union, to replace the present contract which expires Aug. 31, have been accepted by 43 of the smaller concerns. Representatives of 14 of the larger firms have not yet signed the new agreement; but are holding frequent conferences with the so-called independents and with the Federation of Dyers, Printers and Finishers. The tentative contract being considered calls for the retention of the present wage of 66c. an hour and for a closed shop. Unofficial reports state that the new contract permits a return to three-shift operation, removes restrictions from machine production, and provides for the setting up of a work-assignment board for the dyeing and printing industry in the Paterson area.

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Processing Plant News

Western Dyeing & Processing Co., Chicago, Ill., has been acquired by **Franklin Process Co.**, Providence, R. I., and will be operated in future as a subsidiary of latter company under name of **Western Franklin Process Co.**, continuing operations at present mill at 2650 Coyne St,, Chicago.

Gonic (N. H.) Mfg. Co., has awarded contract to A. L. Phelps, Inc., Bridge St., Springfield, Mass., for new addition, to be used primarily for expansion in dye house. H. G. White, Springfield, Mass., is architect and engineer.

American Processing Corp., headed by Rocco Nazzaro, has taken over the former plant of the **Holder Dye Works**, 18 Market St., Paterson, N. J. The new firm has enlarged the plant and installed new machinery. The shop will specialize in rayon novelties, as well as pure dyes and tin weighting. Although the firm is owned by the operators of the Victory Dyeing & Finishing Co., Mr. Nazzaro pointed out that it is an independent firm. The New York office will be at 1441 Broadway, with Fred Kennedy as salesman.

Dean Piece Dye Works, Inc., Brooklyn, N. Y., recently organized has leased local building at 585-601 Dean St., and will occupy for plant.

Theis Dye Works, Centerville, R. I., will construct a mill addition at a cost of $35,000. Peter Martelly, 404 High Street, Bristol, has the general contract.

Clearwater (S. C.) Mfg. Co., has let general contract to Gallivan Construction Co., Greenville, S. C., for new one-story addition for expansion in finishing division. Cost about $35,000, including equipment.

Cutter Mfg. Co., Rock Hill, S. C., is enlarging its finishing plant and will install a Sanforizing unit.

Dixie Mercerizing Co., Chattanooga, Tenn., has let general contract to John Martin Co., Chattanooga, for new two-story addition on Watkins St., 60x105 ft. Cost over $40,000, with equipment. Robert & Co., Bona Allen Building, Atlanta, Ga., are architects and engineers.

Holdsworth Co., Ltd., Montreal, Canada, have purchased the dyeing and finishing equipment of Dominion Dyeing & Rubberizing Co., London, Ontario, and will move to vicinity to Toronto to operate as a branch plant.

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Processing Financial

T. R. Goodlatte & Sons, Delawanna, N. J., coated fabrics, have petitioned for a 77B reorganization.

Century Dyeing & Finishing Co., 9 East 23d St., Paterson, N. J., has been organized by L. Cammarano and James Chance, with Sidney Weiss as sales manager in New York.

General Piece Dye Works, Inc., Paterson, N. J., have been incorporated with capital of 1,250 shares of stock, no par value, to take over and succeed to company of same name, with local mill.

Finco Print & Dye Works, Brooklyn, N. Y., is progressing toward a court decision whether a 77B reorganization will be allowed.

Delta Finishing Co., Frankfort, Pa., has opened a New York office at 40 Worth St.

TEXTILE WORLD'S

Engineering Digest

THE National Bureau of Standards has recently recommended that more use be made by industry of its lists of manufacturers who have expressed a willingness to certify upon request that their products meet Federal specifications and commercial standards. Plant engineers, who are mainly responsible for the selection of the large amount of general industrial equipment, which all mills purchase, should consider this certification plan carefully (while bearing in mind that all manufacturers of satisfactory products are not necessarily included) and, if they have not already done so, should acquaint themselves thoroughly with the specifications and standards referred to. As the chairman of the New Zealand Standards Institution recently remarked, "Standardization is a vital first principle for the elimination of waste and reduction of costs."—*Editor.*

Much Space Reserved For Power Show

The twelfth National Exposition of Power and Mechanical Engineering, to be held during the week of Nov. 30, 1936, will be, in terms of space reserved, a bigger show than was the eleventh exposition. Space charts for three entire floors of the Grand Central Palace, where the exposition will be held, shows that two are now almost entirely filled, and the third is partly filled.

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Safety Rules

North Carolina continues to emphasize safety in textile and other industrial plants. Following are a set of rules recently formulated by one large manufacturing concern:

Superintendents. Accident prevention is a major responsibility. Therefore superintendents will be held responsible to the management for accidents occurring in their department, and for the enforcement of safety rules.

Foreman. It shall be the duty of foremen to instruct their men in regard to specific hazards and the safe way to do their work. Foremen must investigate each accident and report to the superintendent and safety department the cause of accident, with suggestions how to prevent a similar occurrence.

Employees. Safety should be your first consideration. Therefore, you are urged to be careful in performance of your work. Accidents are caused, they do not just happen. The best safeguard is a safe man.

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Repeated Blowing Of Fuses May Cause Serious Damage

Any repeated blowing of fuses on electrical circuits operating a.-c. synchroscopes on power plant switchboards should be investigated at once, and the cause of such blowing determined and removed. A blown fuse means that the synchronizing instrument will stop indicating the phase relation of an incoming machine and the pointer will stop rotating. If such stopping should occur when the pointer is at the neutral point, just as the operator was planning to bring a generator on the line, it would indicate falsely that the incoming machine was in proper phase with the circuit, when it really might be decidedly out of phase. If the switch of the incoming machine were closed under such conditions, more or less serious damage would result. The safest practice is to close the switch when the pointer of the synchroscope is at the top vertical position and moving just so slightly that the operator knows it is functioning properly.

—A PLANT ENGINEER

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Tinsley Heads Machinery Manufacturers

John F. Tinsley, Crompton & Knowles Loom Works, was elected president of the National Association of Textile Machinery Manufacturers at a meeting held last month at the Parker House, in Boston. E. Kent Swift, Draper Corp., was named vice-president. Directors included B. H. Bristow Draper, Draper Corp; David F. Edwards, Saco-Lowell Shops; J. Ebert Butterworth, H. W. Butterworth & Sons Co., Parkman D. Howe, Universal Winding Co.; E. H. Peirce, Atwood Machine Co.; S. F. Rockwell, Davis & Furber Machine Co.; C. F. Tillinghast, Textile-Finishing Machinery Co.; and Messrs. Tinsley and Swift.

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Quarter-Century Air Conditioning

Willis H. Carrier, chairman of the board of Carrier Engineering Corp., reading a paper before a joint meeting of the American Society of Heating & Ventilating Engineers, pointed out that air-conditioning is not a "new art" as commonly considered. A quarter-century ago it had been sufficiently developed from an engineering and commercial standpoint to attract the attention of the program committee of the American Society of Mechanical Engineers. The year 1911 may be set as the time when air-conditioning was generally recognized as a distinct art in the engineering profession. Prior to this date, and for ten years thereafter, air-conditioning was employed almost entirely in industry, which is the reason the public heard but little of it until recent years.

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Schenectady's Half-Century of Progress

Schenectady, N. Y., celebrated its half-century of electrical progress last month to commemorate the establishment of the elec-

Side view of the new "windowless" plant of Hudson Silk Hosiery Co., Charlotte, N. C., one of the newest and most unique hosiery mills in the South. There are practically no windows in the building with the exception of the office section in the front. Lighting and atmospheric conditions are kept constant at all times in order to increase efficiency of operatives and quality of product. Some 90 Holoplane lighting units provide 20 foot-candle at the needle points on the machines. To facilitate loading and unloading, there is a passageway through the center of the building for trucks. The mill produces full-fashioned silk hosiery.

trical industry there by Thomas Alva Edison. Business and industrial leaders from all sections of the country attended the festivities, the outstanding event of which was a formal dinner to which more than 500 guests were invited. Chief speakers were Owen D. Young, chairman of the General Electric board of directors, Dr. George R. Lunn, New York State Public service commissioner, Charles A. Edison, son of the famous inventor, and W. S. Barstow, Edison pioneer and president of the Thomas Edison foundation. Dr. Dixon Ryan Fox, president of Union College, acted as toastmaster.

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New Equipment of Interest to Engineers

Oxy-Acetylene Cutting Attachment. Linde Air Products Co., 205 East 42d St., New York. Cutting attachment, known as the Oxweld Type CW-22, with features of design that permit it to handle light sheet steel, as well as all but the heaviest work, at speeds and efficiency equal to those of the full-size cutting blowpipe.

Double-Shield, Self-Aligning Bearings. Fafnir Bearing Co., New Britain, Conn. Group of ball bearings which combine internal self-alignment with double grease-shield protection.

Combustion Safeguard. Brown Instrument Co., Philadelphia. Improved line of Protectoglo equipment, including two types of relays and a flame-sensitive electrode which can also be used as a special spark plug for electric ignition. Any of the standard line of primary controllers and motor valves are used to complete the system of combustion safeguard.

Anti-Friction Bearings. Link-Belt Co., 307 N. Michigan Ave., Chicago. Following additional anti-friction bearing units available in Link-Belt mountings: Series 100 self-aligning ball-bearing units with double-row bearings; Series 500 roller-bearing units with Shafer self-aligning rollers; Series 600 roller-bearing units with Shafer double-row self-aligning roller bearings having tapered bores and adapter sleeves.

Air Compressor. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Line of two-stage, sliding-vane, rotary air compressors, known as the Ro-Twin, in which both stages as well as the inter-cooler are contained in a single casing.

Speed Reducer. Philadelphia Gear Works, Erie Ave. & G St., Philadelphia. Two new sizes (Nos. 405 and 444) added to the standard series of totally inclosed, fan-cooled Motoreducers.

Grip-Lock Bearing. SKF Industries, Inc., Front St. & Erie Ave., Philadelphia. The conventional, self-aligning, extended-inner-race bearing with an eccentric groove machined in the inner race and containing the Grip-Lock shoe. This feature permits application of the bearing without tools of any kind.

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Engineering Trade Notes

Boston Woven Hose & Rubber Co., Boston, announces the addition of Stanley M. Mercier to its sales and engineering staff. For many years Mr. Mercier was identified with Jeffrey Mfg. Co., Columbus, Ohio.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., recently elected L. W. Grothaus vice-president. Mr. Grothaus has had 32 years of experience with the organization and has served in engineering, sales, and executive capacities.

Babcock & Wilcox Tube Co., Beaver Falls, Pa., recently appointed Edward A. Livingstone manager of alloy tube sales. Prior to this appointment, Mr. Livingstone was engaged in development of special high-temperature, corrosion-resistant alloys for the oil industries.

Imperial Electric Co., Akron, Ohio, has appointed George M. Snodgrass general sales manager. For the last 15 years he was with Fairbanks-Morse & Co.

Acme Steel Co. has appointed V. C. Hogren advertising manager, with headquarters in Chicago.

Rawlplug Co., Inc., 98 Lafayette St., New York, announces that J. W. Gleason has been placed in charge of the Chicago branch. He formerly was general manager of Knapp Bros. Mfg. Co., Joliet, Ill.

American District Steam Co., North Tonawanda, N. Y., manufacturer of steam distribution equipment, has appointed Crane Co.—with offices in Indianapolis, South Bend, Muncie, Terre Haute, Evansville and East Chicago, Ind.—representatives for Indiana.

New Departure Mfg. Co. gave a dinner on July 1 at the Endee Inn, Bristol, Conn., to 252 of its older employes. This group represented an aggregate of 6,070 years of service. Special note was made of the three Heffernan brothers, Frank, Michael and James, who have worked a total of 101 years with New Departure. Included in the list were 6 women with service records from 20 to 43 years.

The Air Conditioning School of Carrier Engineering Corp., graduated the June class with an appropriate closing program commemorating the twenty-fifth anniversary of Willis H. Carrier's disclosure of the Rational Psychrometric Formulae, which form the basis of the air conditioning art the Carrier organization has been practicing for a quarter of a century. Fifty-seven young men, all graduates of accredited engineering schools, completed the training. This course covered all phases of air conditioning engineering, application, and installation.

American Rolling Mill Co., Middletown, Ohio, has announced the appointment of Harry V. Mercer as advertising manager of the company. It is a newly created office at Armco. Mr. Mercer has been associated with the company since 1916.

Julien P. Friez & Sons, Inc., (Division of Bendix Aviation Corporation), Baltimore, Md., celebrated its 60th year of business on June 1, 1936. The company was founded in 1876 by Mr. Julien P. Friez, and its manufacturing activities have been located in Baltimore, Maryland, throughout its history. The company celebrated with a picnic attended by all employees. The air conditioning instruments and controls department has recently appointed the following new factory representatives: W. L. Byrne, 4 Smithfield Street, Pittsburgh, Pa., Russell R. Cannon Co., 519 Main Street, Cincinnati, Ohio.

Foster Wheeler Corp. and General Regulator Corp., New York, announce that the sales departments of the two companies have been consolidated. The distribution of General Regulator hereafter will be made through the branch offices and agents of the Foster Wheeler Corp.

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Engineering Mill News

Bemis Bag Co., Bemiston, Ala., plans the erection of a two-story brick building to be used for a community building. There will also be a gymnasium. The cost will be $50,000.

Bigelow-Sanford Carpet Co., Thompsonville, Conn., is installing six 30,000-gallon fuel oil tanks in connection with the change-over of its power plant equipment from coal to oil combustion, which will be effected about Aug. 1.

United States Rubber Products, Inc., is constructing six new dwellings for the operatives at the Stark Mills at Hogansville, Ga.

Consolidated Textiles Corp., Pelham (Ga.) Div., is reconditioning the houses in its village, and it is understood that the plant itself will be repaired.

New Bedford (Mass.) Cotton Mills Corp., unit of the Hoosac Mills Corp., is erecting a transformer house at the plant in this city. The building will be 20x13 ft.

Cocheco Woolen Mfg. Co., East Rochester, N. H., is planning to supplant the present water power with electric generators and concreting the finishing room.

Gonic (N. H.) Mfg. Co. has work in progress on new power plant. General contractor is A. L. Phelps, Inc., Springfield, Mass.; structural steel, Lyons Iron Wks., Inc., Manchester, N. H.; millwork, Ely Lumber Co., Holyoke, Mass.

Burlington Mills has been doing considerable work recently in the vicinity of Burlington, N. C. A one-story addition to Unit No. 3 is now under construction, a steam plant has been built, and an addition made to Ossipee.

Chipman-LaCrosse Co. has installed new indirect lighting system in its new plant at Hendersonville, N. C.

American Enka Corp., Enka, N. C., is building a gymnasium on the plant property for lease to the Enka Athletic Association. The building will have a seating capacity of 4,500.

Hanes Dye & Finishing Co., Winston-Salem, N. C., was incorrectly referred to in this column last month as Haynes.

Springs Cotton Mills is building eighteen houses near Fort Mill, S. C., to be used by the operatives of the two local plants. Seventeen new houses are being constructed at Kershaw, S. C.

Inman (S. C.) Mills recently installed a new air changing device developed by Bahnson Co.

Watts Mills, Laurens, S. C., have awarded the contract to D. E. Tribble of Clinton, S. C., for the construction of an auditorium, at a cost of $10,025.

Whitney Mfg. Co., Spartanburg, S. C., is offering a plan to enable workers to purchase lots and farm lands close to plant and build their own homes.

FREE FOR THE ASKING—

READERS interested in the catalogs and other useful literature reviewed on this page may secure copies by writing to TEXTILE WORLD, 330 West 42d St., New York, N. Y.

Breaking Strength and Humidity

Parks-Cramer Co. June issue of *Parks' Parables* containing article telling how one mill showed a 13% improvement in breaking strength of filling yarn as a result of regulating humidifying equipment. Includes details of tests plotted on charts over a period of eighteen weeks. Abstract of article appeared in June issue of TEXTILE WORLD.

Sizing Problems

Kem Products Co., Inc. June issue of *Sizing News* containing articles on "Stretch Versus Sizing Strain," "Why Sizing Results are Not Uniform," "Determination of Oil Finish on Natural Rayon." "Cohesion Versus Concentration," and "Do's and Don'ts in Selection and Application of Sizing Compound for Viscose and Acetate Yarns." The last article was reprinted from May issue of TEXTILE WORLD, as abstracted from Johnson's *Rayon Warp Sizing Specialist*.

Custom-Built Bobbins

Draper Corp. May issue of *Cotton Chats* devoted to discussion of advantages of custom-built bobbins.

Sizing Synthetic Yarn

Charles B. Johnson. June issue of *Rayon Warp Sizing Specialist* containing article on the sizing of synthetic yarns, prepared by the research staff of E. F. Houghton & Co.

Boiler Feedwater Treatment

Permutit Co. Booklet describing the advantages of the Permutit internal boiler feedwater conditioning equipment.

Nickel-Alloy Steels

International Nickel Co., Inc. A buyers' guide to warehouse stocks of nickel-alloy steels explaining where metal-consuming industries may most conveniently purchase various steels. Guide contains essential information on compositions, forms and sizes available from jobbers in the United States and Canada.

White Oils

Atlantic Refining Co. Booklet entitled "Battle For Purity," giving characteristics of certain technical white oils refined from domestic crudes. These oils are recommended for textile processing and are non-corrosive to equipment. Can also be made into emulsions.

Pumps

Allis Chalmers Mfg. Co. Leaflet 2,224 describing single suction-end inlet centrifugal pumps used with direct-connected or Texrope V-Belt drives.

Controller

Bristol Co. Bulletin No. 444 describing the new Model 90 pneumatic-type controller for temperature, liquid level and pressure. Contains information concerning applications and drilling dimensions.

Leather Belting

J. E. Rhoads & Sons. Folder describing line of belting and containing useful leather belting facts, such as horsepower ratings, comparative factors for different weights and plies, minimum pulley diameters, typical load-slip curves, factors for difficult drive conditions, and price list.

Compressors

Worthington Pump & Machinery Corp. Bulletin describing single horizontal three-stage, steam- and motor-driven, Types HD-3 and HS-3 compressors. Bulletin describing single tandem horizontal two-stage, steam- and motor-driven, Types HB-2 and HS-2 compressors. Leaflet devoted to list of Worthington products.

Switchgear

General Electric Co. Leaflet describing how modern switchgear equipment is shipped assembled in order to save time and cost of complex installation and wiring.

Yarn Packages

Atwood Machine Co. June issue of *Atwood Twists* containing discussion of winding and twisting large packages of rayon yarn.

Gelatin

Thomas W. Dunn Co. Leaflet on use of gelatin-base products in rayon warp sizing and in throwing rayon crepe. Contains data on slasher speeds and temperatures and formulas for sizing and soaking.

Spinning, Warp Preparation

Saco-Lowell Shops. June issue of Saco-Lowell *Bulletin* containing articles on fiber control, new rayon slasher, sewing of spinning and twister tapes, use of cleaning and blending reserve, modernization of Strickland Cotton Mills, tests on drawing frames, spinning of staple fiber, and improved evener-belt shipper.

Dyes

Sandoz Chemical Works, Inc. Color card showing dyeings of wash-fast colors on pure silk and giving dyeing methods.

Winding, Warping

Sipp-Eastwood Corp. Booklet "Are You in Step." Discusses and illustrates high-speed silk warping, winding of raw silk, static eliminator; Densimeter, Tensometer, warp-tension indicator, quiller tension, etc.

Knitting

Wildman Mfg. Co. Illustrated booklet describing new single-head, single-unit, full-fashioned hosiery machine.

Water Softeners

Hungerford & Terry, Inc. Circular K, illustrating and describing Inversand zeolite water softener with central control valve and copper, gravel-retaining screen.

Acetate Colors

General Dyestuff Corp. Color card showing dyeings obtained with Celliton and Celliton Fast colors on cellulose acetate and giving methods of application.

Control Instruments

Brown Instrument Co. Folder illustrating and describing recently developed line of air-operated controllers.

Steel

Joseph T. Ryerson & Son, Inc. Data book, 192 pp., giving large amount of information on properties of tool and alloy steels and special steels, heat treatment of steels, forging, case hardening, etc. Data are of technical nature intended to assist purchasers in proper choice and handling of steels.

Silicates of Soda

Philadelphia Quartz Co. Bulletin No. 171 devoted to brands, properties, and applications of silicates of soda. One section is devoted to methods of analysis. Other sections describe deflocculation and detergency, adhesives, cements, solutions, etc.

Conveyor Chains

Link-Belt Co. Illustrated 16-page Book No. 1552 covering line of RC Silverlink conveyor chains operating over cut-tooth sprocket wheels, a further development of the finished-steel roller drive chains. It is said to be exceptionally well suited for process work.

Compensated Flow Meters

Foxboro Co. Bulletin describing new automatic pressure-compensation device as applied to line of flow meters. Charts show comparison of un-compensated metering of known flow and compensated metering of same flow.

Hoisting Equipment

Yale & Towne Mfg. Co. Miniature hoist catalog covering complete line of Yale overhead materials-handling equipment, including spur-geared, screw-geared, and differential chain hoists; trolleys; electric hoists; etc.

Inventories

Metropolitan Life Insurance Co. Booklet, "The Physical Inventory Procedure of an Industrial Plant." Contains sections on organization for inventory activities, preparation for inventory taking, enumeration and listing of inventories, figuring the inventory, and utilization of inventory records.

Miscellaneous

Recent issues of manufacturers' publications containing items having a textile slant are as follows: *Link-Belt News*, May, article on chain drives in southern textile mills and other plants; *Aluminum News Letter*, May, item on use of aluminum in Tube-Tex finishing machines; *Nicklesworth*, Vol. 1, No. 1, article on use of Monel metal reels in dyeing machine for narrow fabrics; *The Graphic*, No. 436, photograph showing use of Esterline-Angus graphic instruments in making power-consumption tests in a Georgia mill; *Termaco Times*, May, items on pick counters, bobbin-box hoist, and balers; *Needle's Eye*, June article on attaching elastic tops to knee-length hosiery with Union Special Style 52,700 FZ machine.